Industrial

Standardization

Readers Write

Revise Company Specifications To Agree With American Standard

Commonwealth Edison Company
Chicago, Illinois

Gentlemen: You will be pleased to know that we have begun to revise our own specifications for wood poles to completely agree with the American Standard for Wood Poles, O5.1-1948.

In incorporating this new standard in our specifications, we intend to keep the ASA system of numbering different sections and paragraphs in order to provide easy cross-reference.

EARLE D. LYON
Member, Sectional Committee O5

Industrial Standardization Helpful in Study

Universal Cooler Division
International Detrola Corp
Marion, Ohio

Gentlemen: We have been working strenuously for the last two months on standards for our industry that we hope will be turned over to ASA in the near future. Our refrigeration association, ACRMA, is active in this work, and your publication, INDUSTRIAL STANDARDIZATION, is going to be very helpful in our study.

W. W. HIGHAM
Director of Engineering
Refrigeration Division

Request List of Standards For Foreign Branches

The Intercontinent Corp
New York, New York

Gentlemen: We have read with interest the article in *Modern Machine Shop* relative to the list of national standards which you have prepared and would appreciate it very much if you would send us five copies. We are asking for this number so that we may send copies to our branch houses in Bombay, India, Hong Kong, China, Havana, Cuba, and Puerto Rico, and retain one copy in this office. We supply all kinds of machine tools, electrical equipment, etc, and quite often the question is raised as to what the American Standard is. We believe that with the list you have published we will be able to answer these questions without delay.

J. N. HARE
Purchasing Department

Company Members

More than 2100 companies hold membership either directly or by group arrangement through their respective trade associations

Desire Information on ISA Standards

Sapphire Products Division
Elgin National Watch Company
Aurora, Illinois

Gentlemen: In our contact with several European firms, we have been asked to quote on ISA standards. We do not have a copy of these standards and wonder if you could supply us with two such copies immediately. One question in point is whether we can make gages as large as "22 K 7" ISA Standard.

JOHN F. IRELAND
Sales Manager

• • The reference is probably to the ISA Tolerance System applying particularly to cylindrical parts. This system was developed before the latest war by a technical committee of the former International Standards Association (ISA) and has been generally adopted in industrial practice on the European continent. Information about the ISA standards can be obtained from the American Standards Association.

Subcommittee to Compile Industry Terminology

Aluminum Company of America
Detroit, Michigan

Gentlemen: At an Aluminum and Magnesium Comimttee meeting of the American Foundrymen's Association I was appointed chairman of a subcommittee to make a study of terms used in the Foundry Industry. It is intended that a similar program will be followed in the other sections of the American Foundrymen's Association. Furthermore, these groups are to develop and submit a terminology intended as a standard of the American Foundrymen's Association. It is my understanding that the American Standards Association has compiled terms used in various industries and that you are in a position to grant us the use of definitions of terms associated with metallurgy, mechanical and electrical engineering, material handling, and other professions closely associated with the Foundry Industry.

A. W. STOLZENBURG

• • A complete list of American Standards was sent to Mr Stolzenburg so that he could select those most helpful to him in his work.

Our Front Cover

Machine-shaved poles from the Pacific Northwest lie loaded in an open tank for nonpressure treatment by a hot and cold submersion process. See page 85 for article on the new American Standard on wood poles.

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In This Issue

ASA Reg. U. S. Pat. Off.

Ruth E. Mason, Editor — Janet Meldon, Assistant Editor

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

Single copy, 35 Cents — August 1948

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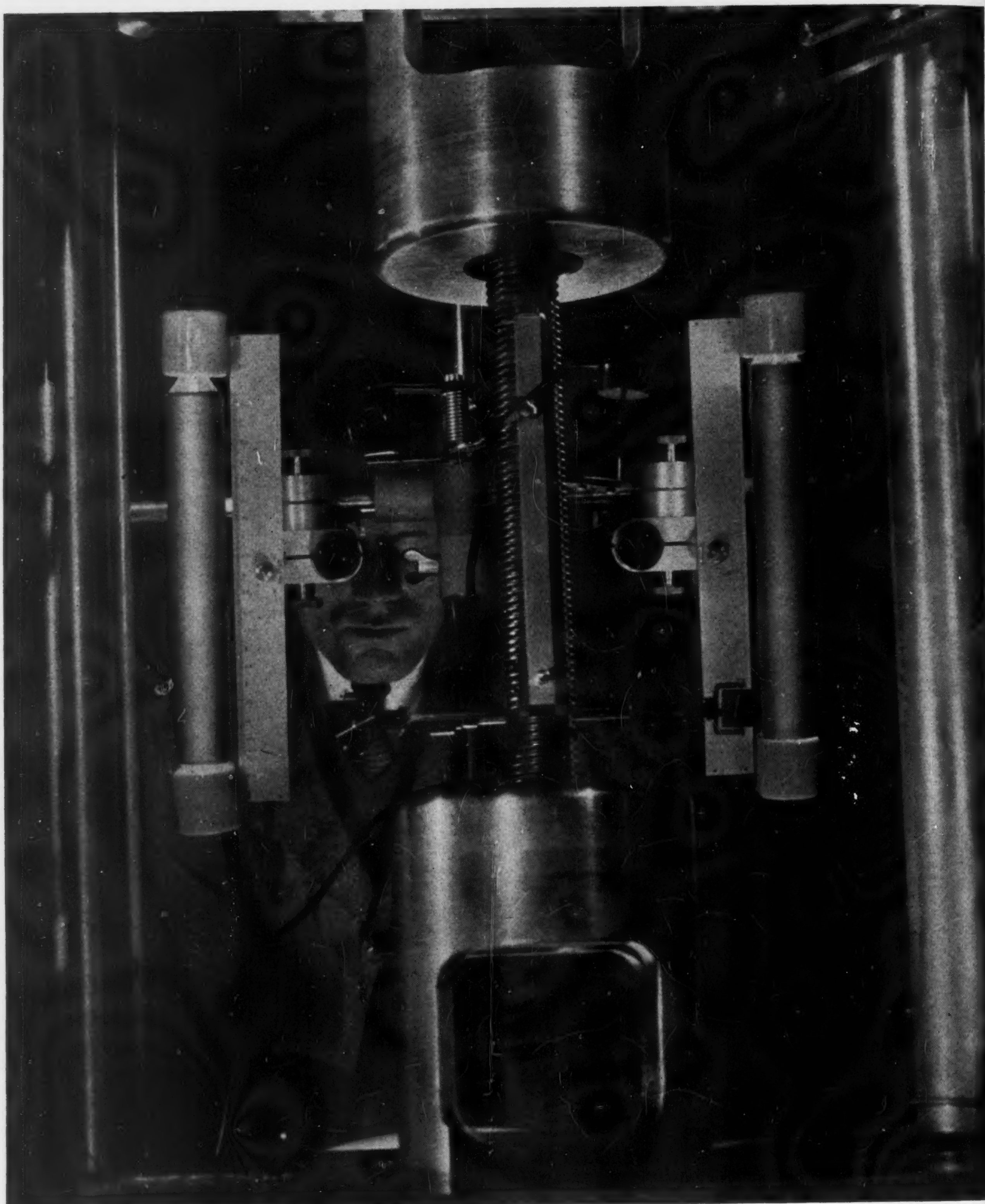

Edward Valve & Manufacturing Co, Inc

The proportional limit test in process is being made to determine the greatest stress which a material is capable of developing without a deviation from the law of proportionality of stress to strain. A vast amount of cooperative research work on properties and tests of materials is sponsored by more than 700 technical committees of the American Society for Testing Materials. The work of this organization is reviewed on page 88.

On Variations in Materials, Testing, and Sample Sizes

By Leslie E. Simon[1]

As part of the Symposium on Usefulness and Limitations of Samples sponsored by the ASTM Committee on Quality Control at the meeting of the American Society for Testing Materials June 22, a paper was presented by Colonel Leslie E. Simon which should be of particular interest not only to standards engineers working on industrial products but also to individuals and groups concerned with standards for consumer goods. Colonel Simon, who was a member of the Emergency Technical Committee which developed the American War Standards on statistical quality control, speaks with authority on the application of the method. Here he talks about the problems encountered due to variations in sampling as the basis for tests. Colonel Simon asks whether it is too much to expect the technical committees of ASTM to use some of the methods of statistical quality control in specifying the quality of materials. This same question undoubtedly could be considered by technical committees of other organizations concerned with standardization as well as by sectional committees organized under the procedure of the American Standards Association.

CURRENT interest in scientific techniques for sampling and testing brings with it both interesting applications and misapplications. According to the *New York Times* of February 10, 1948, English Minister of Health Aneurin Bevan recently related to the House of Commons an application by distinguished men, if not distinguished application.

"G. K. Chesterton and Hilaire Belloc had been arguing as to the cause of drunkenness, and they decided to apply the scientific method. One night they drank whiskey and water, and got drunk. The next night they drank brandy and water, and got drunk again. On the third night they drank gin and water, with the same result. Since water was the constant factor in all three trials, they concluded that water was responsible for their drunkenness."

Most of us would not criticize their design of experiment—perhaps there is much to recommend it—but we feel that in our testing of materials we would scarcely be guilty of such spurious correlation and mal-interpretation of results. However, we might well consider how many almost equally serious errors we commit from day to day because of not clearly defining our aims and purposes, because of not properly identifying the kind of variation of material under test, and because of not recognizing the effect of sample size.

Sampling—A Predictive Process

Most of us are busy day in and day out in some specialized field of work, handling materials, facts, and figures. Many of us feel that we know pretty well what we are doing, and that we do not take chances, or at least, not many. Those who feel that way are generally fair-minded about inviting anyone to show them, if they are wrong—especially if the new viewpoint is beneficial—so I am going to discuss for those who are open to conviction a challenging question. Do we not know very little about the real quality of materials, do we not accept as facts things that are largely mere predictions, and are not usual figures on quality of materials little more than estimates with no known degree of certainty?

First, let me score the point about prediction. Suppose that you take a single sample from a consignment of 2-in. bolts. You measure it with a desk rule and say, "Yes, it is two inches." Another person may pick it up, measure it with a machinist's scale, and say, "No, it is only 1.96 inches." To settle the point, you might call in an inspector with a precision micrometer, have him measure it 10 times, and take the mean. His mean value might be 1.965. If we were to set up a sine bar, we would get another answer; if the physicist measured it, using the wavelength of monochromatic light, another. The point is that we can never know the absolute length of the bolt, and that what we really mean when we state that the length is 1.95 in. is that we *predict* that if a large number of measurements were taken by a skilled operator, with a well-calibrated and appropriate instrument, the mean of the measurements would approach 1.95 in. and not some significantly different value.

The element of prediction may be trivial in the specification of length of a bolt, but the uncertainty of prediction is not trivial in testing the corrosiveness of oil, where one must carefully specify how a copper test plate will be freshly polished, how the oil will be applied, the temperature, and the judgment of corrosion. The important thing is knowing something about the degree of uncertainty so that the method of measurement can be specified in such a way

[1] Colonel, Ordnance Dept, Director, Ballistic Research Laboratories, Aberdeen Proving Ground, Md.; member, ASA Emergency Technical Committee in charge of development of American War Standards on Quality Control, Z1.1-1941, Z1.2-1941, and Z1.3-1942.

that the element of prediction *will be* trivial. In this connection, the Committee on Quality Control of Materials is trying to furnish services to the technical committees that write the ASTM specifications that will enable them to decide wisely in the many less obvious cases that lie between the length of a bolt and the corrosiveness of an oil.

However, the facts and figures based on the prediction of the quality of samples may not be our most hazardous predictions. Why do we take samples at all? Certainly the few measurements on the samples are not in themselves of any practical consequence. We take samples for one reason only in order to predict the quality of the remaining aggregation from which we draw the samples. Furthermore, we know that material varies. If we take a sample of two items from a consignment and test them, the two test results will generally be different. If we begin to consider carefully what we are going to say about the unsampled items, we begin to feel a bit "sheepish." We are perfectly sure that if we tested all the items, they also would be not only different but would not even fall within the limits of the two test results. It is evident that before we can make valid predictions, we need to know something about the *variability* of the material; that is, the distribution of the quality characteristic in the lot of items.

Just in case that life does not look uncertain enough at this point, let me say something much worse. Unless there is a relationship—preferably a known relationship—between sample and unsampled remainder (homogeneity within the lot), an inference of lot quality from sample quality is impossible. Very frequently there is no evidence of a relationship at all between sample and lot.

In summary, a sample of one tells us that *before* the sample was taken, one item in the lot had such-and-such value, and that is about all. A sample of two (the test results being different) tells us that there is some variation in the lot (or in the measurements) but indicates little about the degree of variation. As the sample size is increased, our ability to predict the limits of variation increases, provided there is a relationship between sample and unsampled remainder. Thus it is evident that the testing of materials should involve at least three steps: (1) design of experiment, (2) execution, and (3) interpretation of results.

Design of Experiment

The first item in the design of experiment[2] is the careful identification of the important test phenomena, lest testing be done on a characteristic which is only poorly related to engineering performance. It seems trite to say, "know what you are testing for," but that is a point on which many material tests fail. I have heard steel men say that one of the most significant contributions of the war was the specification for gun-tube forgings. Yet, the principal fault of the old specification was not necessarily statistical—the fault was in design of experiment. The reasons for the difficulties in sampling are obvious. Sampling a gun-tube destroys it, so samples must be taken from both ends of the finished and heat-treated forging just outside the metal required for the finished, machined tube. This practice was changed by adaptation of more systematic methods of sampling with provision for statistical consideration of results and provision to have specimens taken from the mid-length of check forgings only when impact testing is required. In addition to the above, a comprehensive metallurgical study assisted by statistical analyses did indicate that a considerable reduction in testing might be effected without loss in quality. Further, such analyses assisted materially in keeping quality in control. The knowledge contributed both to better steel making and to more economical use of materials; and towards the end of the war, the Ordnance Department was making thin-skinned guns that literally swelled when the projectile passed through them like the ostrich's neck when he swallows an orange.

Predictability

If the sampler has access to the continuous flow of product from the manufacturer, not only does the verification of a predictable relationship between sample and lot become easy,[3] but great economy in sampling becomes practicable, because a background of past knowledge can be combined with the knowledge from the specific sample. Under these conditions, the sample can be used for the sole purpose of indicating no evidence of a change from previously established quality. A manufacturer who keeps quality control records as described in the ASTM Manual on Presentation of Data[4] can furnish this essential information to a consumer. However, in the absence of access to quality control records, the process of verifying a state of statistical predictability becomes prohibitively expensive,[5] and it is common practice to place reliance on the reputation of the manufacturer; on all the products being from the same heat of steel; on all articles being from the same industrial lot; and similar assurances of homogeneity.

It often happens that there are engineering reasons for suspecting lack of homogeneity, and provision is made for taking samples from the top, middle, and bottom; from every batch; from every box, etc. If variation in materials is by strata and if the stratification can be identified *a priori*, great economies can be made in sampling and testing. Without going into the subject exhaustively, there is one point in technical procedure which is of such outstanding importance that it deserves special mention. Sampling of lots, batches, or other categories is often prescribed on a percentage basis. This is a grievous error. The evidence produced by a sample is proportional to the sample size and almost independent of the size of lot from which the sample is drawn.

Let me put that idea in numbers. A sample of 10 from a lot of 100 is only a slightly more reliable witness of lot quality than a sample of 10 from a lot of 1000. If sampling were by attributes it would take a sample of only 11 from the lot of 1000 to yield precision slightly better than that of the sample of 10 from a lot of 100. Thus, for once, for all, we should make an end of writing provisions for taking a sample of p per cent of the lot. It is not only waste but often results in preferential treatment of poorer producers. The use of statistical methods in the design of experiment will provide many powerful economies of this sort.

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[2] R. A. Fisher, "The Design of Experiments," Haffner Publishing Co, New York, N. Y.

[3] L. E. Simon, "The Industrial Lot and Its Sampling Implications," *Journal of the Franklin Institute*, Vol 237, No. 5, May 1944.

[4] "Manual on Presentation of Data," American Society for Testing Materials, Philadelphia, Pa. (1943).

[5] For quality characteristics tested on an attribute basis; that is, go, no-go; defective, non-defective; and so forth, mere random selection of sample insures validity of prediction from sample to unique lot.

Execution of Experiment

The design of the sampling experiment must anticipate the variations introduced by the execution phase of the experiment. When an engineer prescribes a minimum average of 50,000 psi on a small sample to meet a real requirement of 30,000 psi on the part of the lot, he generally feels that he is doing so because of anticipated variation in materials. However, only a part of that anticipated variation is in the materials. A part of the variation is due to the incertitude associated with the small sample. A part is due to the method of selection of the sample, which may be far from the wisest as was the case in the gun-forging specifications. A part is due to variability in the measuring process, including both errors of the instrument and errors of the operator. If cognizance is not taken of the variations introduced by execution of experiment, materials may be accepted which are unsatisfactory and also satisfactory materials may be rejected, not because of their variability but because of variability in the method of measurement.

There are three well-known attacks on the problem of variations introduced by execution of experiment. The engineer's usual attack consists of some use of standards or working standards (to minimize errors of calibration) plus reliance on factors of safety. The physicist tends simply to over-instrumentation; for example, if he needs to measure time to 0.01 sec, and his electric clock is doubtful at that figure, he will employ an electronic counter-chronograph good to 0.00001 sec. Techniques which would be extravagantly prohibitive for repetitive industrial measurements may be an economic way for the physicist to dispense with the whole problem of variations of measurement. The Quality Control Engineer, however, carries an additional burden. He must seek the economic use of materials. Consequently, he must attempt to strike an economic balance between the costs of inspection and the costs of the consequences of making errors either by occasionally accepting sub-standard materials or occasionally rejecting materials that are standard or better. Enormous savings are possible for producer, consumer, and the public through the recognition and use of the methods of the Quality Control Engineer.

Interpretation of Results

In order to achieve the economic advantages of the statistical viewpoint, not only must one recognize the predictive nature of all sampling processes, but be able to evaluate, at least approximately, the probabilities associated with the predictions. Action (acceptance, further inspection, re-working, re-grading, or rejection) must be predicated upon an evaluation of probable sampling information together with other available knowledge.

For example, if the variability of a material in terms of its standard deviation, σ, is known, and if its average based on a sample of n specimens is A, then the material can be safely used where a minimum average value B is required, provided that $A - B$ is greater than 3 σ divided by the $\sqrt{n}$. If a risk of one chance in ten of failure can be accepted (say that the defective material will be discovered in assembly and results in only a small cost for correction), A — B greater than about 1.3 σ divided by the $\sqrt{n}$ is the appropriate criterion.

Use of Quality Control

Many similar provisions for the economic achievement of one's aim in a known and calculated way are available for the scientific specification of quality. The textual matter need say nothing specifically about design of experiment, execution, and interpretation of results any more than the scientist defines his method of hypothesis, experiment, and test of hypothesis. It is not necessary to employ the language of statistics. In fact, only the trained statistician may be able to detect the procedures based on economic and calculated risks from those based on intuitive estimates, usual practices, and guesses. However, there is a great deal of difference in the thinking that goes into the two kinds of procedures.

Is it too much to expect the technical committees of the ASTM to use some of the methods of statistical quality control in specifying the quality of materials? The Society's Committee E-11 on Quality Control of Materials does not think that it is. This committee is revising the ASTM Manual on Presentation of Data and trying to arrange a comprehensive treatment of quality control of materials in such a way that the engineer can find conveniently the information that he wants, expressed largely in terms with which he is familiar. Furthermore, the membership of Committee E-11 is available to render assistance in difficult ASTM problems.

I believe that the engineers of ASTM are forced by circumstances consciously or unconsciously to make a choice between two alternatives. Either they will identify themselves with the cynically defined practical man—the man who is either too busy or not sufficiently alert to find out what a new thing is all about—and the science of engineering will tend to lag behind other sciences or else they will learn to use the new and powerful engineering tools now provided by science and lead engineering to new economic triumphs. Since the ASTM was one of the pioneers of Quality Control, there is little doubt about your meeting the challenge.

Film on Quality Control Prepared by Johns-Manville

One of the features at the annual meeting of the American Society for Testing Materials this year was a motion picture on quality control presented by Simon Collier, Director of Quality Control at Johns-Manville Corporation. This sound color film is used by Johns-Manville in its extensive training program which teaches the modern techniques of quality control to the production and inspection personnel.

"During the war years," Mr Collier explains, "the necessity of using many substitutes tended toward a lowering in quality standards and as a result customers are now most critical and are demanding more quality than is really necessary. Industry is currently faced with this problem and it behooves them to recognize this situation and take corrective steps."

The film was prepared because of the past success in training employees by means of audio-visual devices, but, Mr Collier declares, it should be stressed that no quality control program can succeed without proper planning and selling the program to production and engineering groups.

ASA Adopts Universal Decimal Classification System

THE American Standards Association has decided to adopt the practice followed by other national standardizing bodies and to classify American Standards in accordance with the Universal Decimal Classification system. By means of this classification, American Standards can be easily incorporated into libraries and identified as part of the technical literature in all parts of the world. The UDC numbers, which are in Arabic and thus can be read without difficulty regardless of the language of the country, will appear on the front cover of all standards approved by the American Standards Association and distributed through the ASA office.

UDC Is Expansion of Dewey Decimal System

The Universal Decimal Classification is in effect an enlargement and expansion of the well-known Dewey Decimal System. Both are an effort to make it easier for readers to locate the material they need on any subject through adequate classification and indexing. Whereas the Dewey Decimal System was set up with the main purpose of classifying books, the Universal Decimal Classification is greatly expanded to make it possible to classify all the literature of the world—however published—as article, pamphlet, periodical, or book. The difference in the two systems is indicated in the fact that several years ago it was estimated that the UDC system was ten times as large as the Dewey system, with more than 100,000 divisions in the main classification tables as compared with 11,000 in the Dewey system. Probably more important than size, however, is the fact that the UDC system, as the younger of the two, has placed more emphasis on science and technology as compared with philosophy and religion and offers a much more complete breakdown of subjects in these fields than does the Dewey system.

The Universal Decimal Classification system is strictly a classification system, grouping similar ideas and bringing together related concepts and groups of concepts. In this system the whole of human knowledge is divided into ten groups, each of which is divided afresh by the addition of more decimal places. For example, some of the first of the American Standards to be published with Universal Decimal Classification (UDC) numbers will be on still and motion picture photography. The American Standard Method for Predicting the Permanency of the Silver Images of Processed Films, Plates, and Papers will be UDC 772.1. The first 7 stands for the main class "Fine Arts. Applied Arts. Entertainment. Recreation. Sport." The second 7 stands for "Photography," a subclass under the main class. The 2 stands for the subgroups "Processes Based on the Light Sensitivity of Inorganic Compounds." The decimal point indicates the further breakdown into the specific subgroup, listing the processes, and 1 stands for "Processes using silver salts."

On the other hand the American Standard Methods of Testing Printing and Projection Equipment has the UDC number 778.11:778.2. The first two numbers are the same as the above. The 8, however, indicates "Applications of Photography," the ".1" indicates the subgroup "Copying. Enlargements. Reductions," and the second "1" after the decimal indicates "Contact printing, including reflex printing." The sign ":" indicates that two different ideas are related in this single standard, in this case the ".2" indicating the classification "Projection. Apparatus. Screens. Lantern Slides." Any number of ideas in a single document can thus be classified by the inclusion of additional colons and classification numbers. A British standard or a French standard on these same subjects, although classified by different individuals, would have the same numbers under the Universal Decimal Classification system.

The idea of the Universal Decimal Classification system was first presented at an international meeting of librarians in Brussels in 1895. As a result of this conference, the International Institute of Bibliography was organized, later known as the International Institute of Documentation and since 1937, the International Federation for Documentation (FID). This organization is now working closely with the International Organization for Standardization. The purpose of the Institute was to devise a scheme of indexing all the literature of the world. It was decided to build on the Dewey System which had been set up in the United States in 1876. Their first edition published in 1898 was a translation of the Dewey system. Since that time several editions, each one more finely subdivided, have been issued. The work of expanding the UDC system is in the hands of a board called the International Committee on Decimal Classification, which consists of representatives of national sections of the International Federation for Documentation.

British Preparing Standard on Universal Decimal Classification

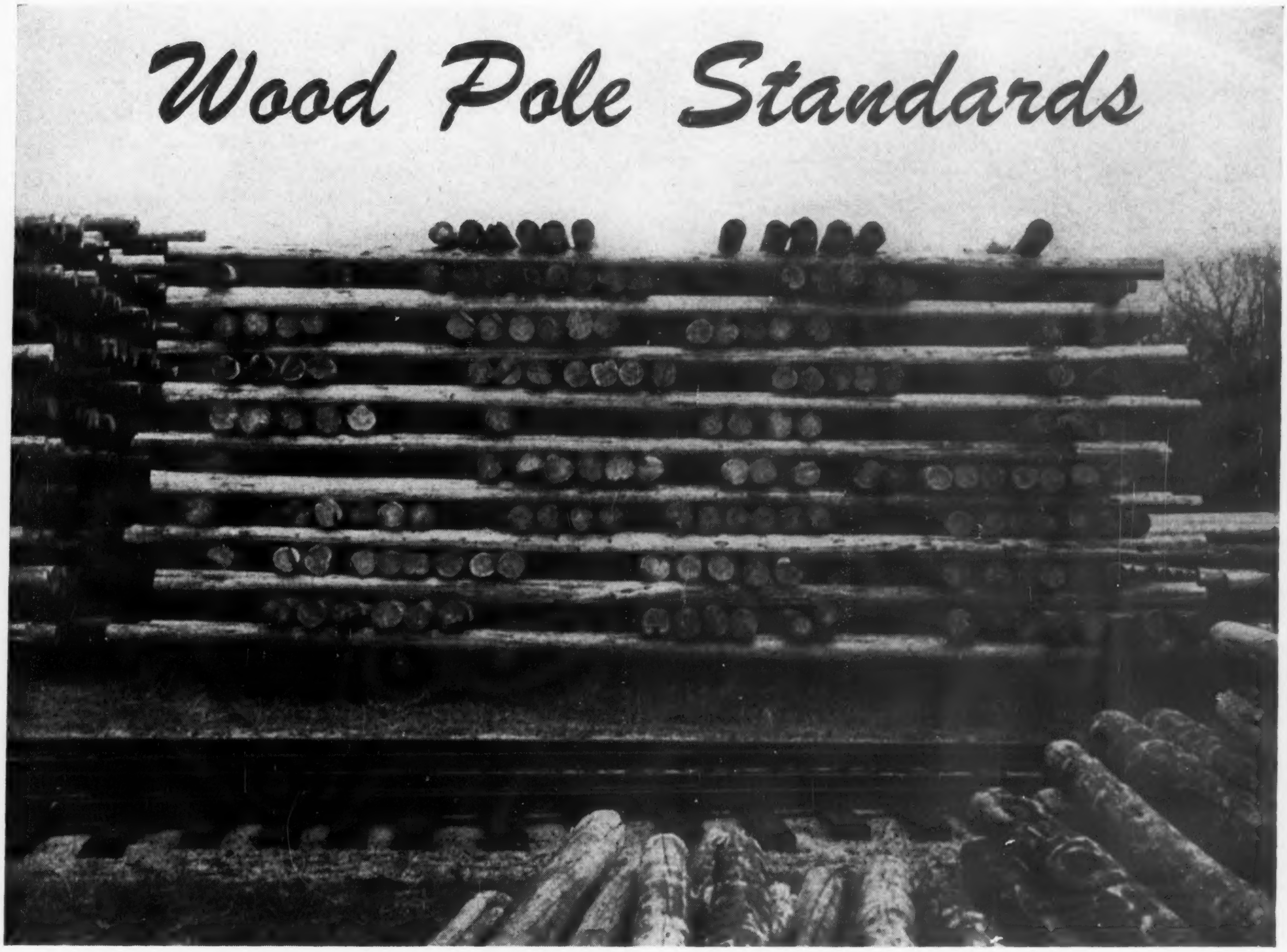
An English edition of the UDC system is being prepared by the British Standards Institution at the request of the British Society for International Bibliography and the Association of Special Libraries and Information Bureaus. This work has the approval of the Education Foundation, Lake Placid Club, New York, publishers of the Dewey Decimal Classification, and is under the auspices of the International Commission of the Decimal Classification and of the International Federation for Documentation. Four volumes have already been published as British Standard 1000. The parts now available are:

Vol 1, Part 1.	General Introduction. Auxiliary Tables. Class 0, Generalities.
Vol 2, Part 1.	Classes: 50, General works on pure science; 51, Mathematics; 52, Astronomy, Geodesy; 53, Physics.
Vol 2, Part 2.	Class 54, Chemistry.
Vol 2, Part 3.	Classes: 55, Geology, geophysics; 56, Paleontology; 57, Biology; 58, Botany; 59, Zoology.
Vol 4, Part 2.	Class 621.3, Electrical Engineering.

As a working document to make the entire classification system available in English in immediately usable form, however, the British Standards Institution has issued an abridged edition covering all the main divisions and principal subclasses. It also includes an explanation of the system and how to apply it. This edition, British Standard 1000A:1948 (F.I.D. No. 221) is the reference source used in establishing UDC numbers by the ASA.

Technical Knowledge and Practical Experience Are Coordinated to Produce Widely Influential

Wood Pole Standards



Economic use of natural timber supply is one of principles determining selection of species and material requirements; 15 years' experience with early editions shows application of standard to more than 50 million poles; preservative treatment required to conserve pole life

By Dr Reginald H. Colley

Bell Telephone System; Chairman, Sectional Committee on Specifications for Wood Poles, O5

THE main principles of these new American Standard specifications for wood poles have been tested for something over 15 years in the production of more than 50 million poles. During this time the pole-producing and using industries have seen many changes, some due to altered conditions in the natural supply of timber and some due to economic and technological conditions which brought about a shift in the demand for different types of poles. When the committee began its work nearly a quarter of a century ago, only a few species of poles were included in its studies. These were northern cedar, western cedar, chest-

nut, and southern pine. However, as the work progressed and more producer and consumer groups were brought into the framework of the project, it was necessary to include lodgepole pine and Douglas fir, representing in effect two new bases for the supply of wood poles—the former in the mountain states area and the latter on the Pacific coast.

The specifications for the first four species were approved as tentative American Standards in 1931. Lodgepole pine and Douglas fir were added in 1933. At about this time the various factors involved in the depression began to affect seriously the annual use of treated timber products—poles included. There was a rise in the demand for poles as a result of the activity of the Rural Electrification Administration and expansion of established utilities which was particularly noticeable by 1937; but the increase in production promised in that year was not maintained.

The war brought other changes. Not only was new construction seriously curtailed by the wartime economy but pole line maintenance was affected as well. The diversion of materials and manpower to war uses caused unexpected complications because it brought about the production and use of miscellaneous pole timbers that had not been covered in the National Electrical Safety Code or by the American Standard specifications. The tentative standards had been confirmed as American Standard in 1941 without any essential change in the structure or content of the specifications. However, it was quite obvious that these existing standards did not cover the situation.

With a view to providing fair comparison of the various pole timbers available in the country and so set up a more reasonable basis for cost and price control factors, the Office of Price Administration requested the Association in July 1945 to prepare a war standard specification, modeled along the lines of the existing standards. This was to cover all of the coniferous species in actual production at that time, and to include additional species which were likely to come into the picture if the war drain on standard timbers should continue. This American War Standard was issued as O5.7-1945 on November 30, 1945.

The actual cessation of hostilities did not by any means bring about a return to normal in the pole industry. Pole suppliers shipped their wares all over the country in a tangled net

The production and use of treated wood for poles is a dynamic industry. Millions of poles, and millions of gallons of preservative are required annually. The trend of demand in the last four years is illustrated by the following figures:

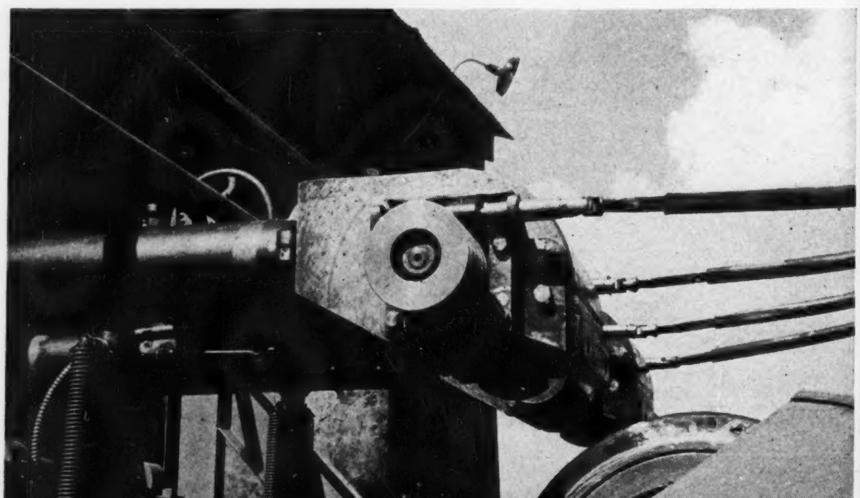
Year	*No. of treated poles produced*
1944	2,993,823
1945	4,226,786
1946	6,546,116
1947	7,808,635

of car routings that made the rather simple meaning of "coals to Newcastle" seem like an ancient fairy tale. Out of all the confusion, however, there emerged a number of survivors of the American War Standard that had definitely made a place for themselves in utility and communication lines.

Conspicuous among these pole timbers were jack and red pine from the Lake States area, Douglas fir from the inland empire and from just across the border in Canada, western larch (western tamarack), some western hemlock, and ponderosa pine, which latter ranges in the western mountains from north of the Canadian border to south of the Rio Grande. In addition, certain of the true firs, such as white fir, were attracting favorable attention in California.

Following the regular procedure of the Association, the war standard was referred to Sectional Committee O5 on Wood Poles for amendment or rejection, or for such other action as might be deemed desirable. The committee first had to decide which species warranted attention. It arrived at the decision to include the species just mentioned above and reject all the others that had been originally covered in the American War Standard.

At the same time, the old favorite of the eastern states, the American chestnut, was eliminated entirely from the specification because it is no longer in commercial production. In 1931 the chestnut forests were already badly infected with the chestnut blight, one of the most destructive tree diseases that has ever appeared in the United States. Poles were still being produced from the dead and dying trees and from the uninfected trees on the edge of the blighted areas. Within a few years commercial production had dropped to a practical zero and the standard for chestnut poles was useful only for making comparisons with chestnut poles still in line and with new



G. Q. Lumsden

The solid rubber-tired driving wheels and the two floating planer heads of a modern pole-shaving machine reflect present-day forestry methods.

The new American Standard Specifications and Dimensions for Wood Poles, O5.1-1948, was developed by a sectional committee of 21 national organizations concerned with the production or use of wood poles or with the technology involved in determining their relative strength and durability. This committee was formally organized in 1924 and has been in existence continuously ever since, working under the sponsorship of the ASA Telephone Group, i.e., the Bell Telephone System and the United States Independent Telephone Association.

The present edition, which includes the specifications and dimensions for all species of poles in one document, is a revision of the following:

American Standard Ultimate Fiber Stresses of Wood Poles..	O5a-1933
Specifications and Dimensions for Northern White Cedar Poles	O5.1-1941
Specifications and Dimensions for Western Red Cedar Poles..	O5.2-1941
Specifications and Dimensions for Chestnut Poles...........	O5.3-1941
Specifications and Dimensions for Southern Pine Poles......	O5.4-1941
Specifications and Dimensions for Douglas Fir Poles........	O5.6-1941
American War Standard Specifications and Dimensions for Miscellaneous Conifers	O5.7-1941

Copies of the 1948 edition are available at 50 cents each.

species that might be bought to replace them.

As in the earlier history of the committee's work the problem of agreement on fiber stresses for the new species was a major task that had to be completed before revised specifications could be prepared. What actually happened was that the committee finally chose a relative strength line based upon the 6600 psi fiber stress for lodgepole pine poles, and attempted as far as practicable to bring the new species and the species covered by the old standards into approximately relative position with respect to this line.

The net result of the committee's deliberations was a compromise, not perhaps reaching the ideal of completely equivalent rating but still leaving a workable arrangement, which is subject to correction as more information is made available. The new species were rated on the basis of the lodgepole pine line. The old pole species were left at their standard ratings largely because of the difficulties that would be involved in trying to amend existing agreements and regulatory rulings already in force and affecting the use of the standard species in the different states.

After considering the question of whether to issue separate specifications for each one of the pole species, agreement was reached to present a single document which would serve as a central guide for producer and consumer alike, and which would make for easy comparison among the various species represented. This single document contains material requirements and dimensions for the following poles:

- Group I: Fiber stress 3600 pounds per square inch
  - Northern white (eastern) cedar (Thuja occidentalis)
- Group II: Fiber stress 5600 pounds per square inch
  - Western red cedar (Thuja plicata)
- Group III: Fiber stress 6000 pounds per square inch
  - Ponderosa pine (Pinus ponderosa)
- Group IV: Fiber stress 6600 pounds per square inch
  - Western firs (true firs)
    - California red fir (Abies magnifica)
    - Grand fir (Abies grandis)
    - Noble fir (Abies nobilis)
    - Pacific silver fir (Abies amabilis)
    - White fir (Abies concolor)
  - Lodgepole pine (Pinus contorta)
  - Northern pines
    - Jack pine (Pinus banksiana)
    - Red (Norway) pine (Pinus resinosa)
- Group V: Fiber stress 7400 pounds per square inch
  - Douglas fir—all types (Pseudotsuga taxifolia)
  - Western hemlock (Tsuga heterophylla)
  - Southern pines
    - Longleaf pine (Pinus palustris)
    - Shortleaf pine (Pinus echinata)
    - Loblolly pine (Pinus taeda)
    - Slash pine (Pinus caribaea)
    - Pond pine (Pinus rigida serotina)
- Group VI: Fiber stress 8400 pounds per square inch
  - Western larch (western tamarack) (Larix occidentalis)

All of these timbers are conifers and all are evergreens with the exception of western larch. All of the timbers are shaped almost ideally for poles and their use as poles comes about as close to complete utilization of the entire trunk of the tree as is practicable. In some modern pole-producing plants the whole trunk is actually brought to the yard and every usable part is made into pole or tie or post or lumber. Such an operation involves a degree of mechanization, including machine shaving of the timber, that was in an early stage when the first tentative standard specifications were issued.

The new specifications expressly state that these poles "are to be given a preservative treatment." The time has passed for setting untreated timbers in utility lines; rather the aim is to get as many years life as possible at the lowest annual cost. The principle used in preparing the new American Standard was to make each one of the species listed in any given class and length an approximate equivalent of any of the other species of the same class and length with respect to strength in line. The specification does not cover preservative treatment. However, other agencies, such as the American Wood-Preservers' Association, are developing treatments that give promise of insuring approximately equal service life to these poles. The use of the various species will, of course, depend on the economics of the moment, which, for example, might well include an increased production for joint-use by power and communication interests of poles from the Douglas fir, western larch, and ponderosa pine forests.

A new provision is a standard branding system which will facilitate comparison of the different species under actual service conditions.

It would be too much to say that the new standard is a perfect document. There are still points or issues on which one would be almost certain to find disagreement, such as the degree of spiral grain, the size of knots or knot groups, and the amount of insect damage that might be permitted. It is expected that the results of some of the committee's deliberations on such questions will be made available as soon as the material can be prepared for publication. By and large, the experience of the last 15 years has shown that the provisions of the standard have promoted a wise and economic use of the natural timber supply. Except in cases where a custom product is desirable or necessary, production under the specification will provide a high average quality product to meet most pole line requirements. As with the old species, so with the new—experience will indicate necessary changes to make the specifications more practical and satisfactory to both producer and consumer alike.

ASTM Climaxes 51 Years of Work in Specifications and Methods of Test

EMPHASIZING again the importance of work in materials, members of the American Society for Testing Materials approved 52 new tentative specifications and test methods at the Society's 51st Annual Meeting in June. About 70 existing tentatives are to be adopted as standard, subject to a letter ballot during the summer.

At this same meeting, Richard L. Templin, assistant director of research and chief engineer of tests, Aluminum Company of America, was elected president for the term 1948-49, while L. J. Markwardt, assistant director, U. S. Forest Products Laboratory, will serve as vice-president.

Mr Templin joined the staff of the Aluminum Company of America as chief engineer of tests in 1919, after two years with the National Bureau of Standards in Washington, D. C. Since 1942, he has had the additional responsibility of assistant director of research. Throughout these years, he has been personally responsible for the development of many of the testing methods used today in the inspection and quality control of aluminum products. He has designed much of the physical testing equipment used in Alcoa's 21 mechanical testing laboratories.

R. L. Templin

L. J. Markwardt

Directed Engineering Research

Except for an interim period of three years when he served as a member of the faculty of the Engineering College of the University of Wisconsin, Mr Markwardt has been in engineering research work at the U. S. Forest Products Laboratory since 1912. Prior to his appointment as assistant director in 1943, he was in charge of the Division of Timber Mechanics and directed the Laboratory's extensive engineering research on wood and woodbase materials. During World War II many important investigations were made there, including the development of design criteria for aircraft and uses of wood for other war purposes.

It was in 1898 that the ASTM was first organized as the American section of the International Association for Testing Materials. When it became apparent that an independent association could best carry out the work on standardization and research in this country, the present Society was incorporated in 1902.

From a membership of 70 in 1898, the Society has grown to include almost 6500 members. All parts of the United States are represented and many memberships are held in Canada, Great Britain, Latin America, and other foreign countries. This membership is drawn from many of the more important industries of the country. Classification falls roughly into three groups: consumers of raw materials and semifinished and finished products; producers of materials; and a general interest group, comprising engineers, scientists, educators, testing experts, and research workers.

That part of ASTM work which has to do with the "promotion and knowledge of the materials of engineering" is effected through investigations and research by committees and individual members of the Society and by research carried on with other groups. Results are presented as papers, reports, and discussions at Society meetings.

The extent and scope of the Society's interest in research and tests for materials is indicated by the variety of papers presented at this year's annual meeting. More than 135 papers and reports were read and discussed at the technical sessions and symposiums. These included such topics as ultra-sonic testing, metallography in color, magnetic testing, mineral aggregates, functional tests for ball-bearing greases, and reactive materials in concrete.

700 Committees Develop Standards

The "standardization of specifications and methods of testing" is carried out chiefly by technical committees of which there are now more than 700. They are largely responsible for the development of the ASTM specifications and methods of test and for keeping them up to date. They also sponsor a vast amount of cooperative research work on the properties and tests of materials. Some of the important long-range projects of this nature include:

(1) Atmospheric exposure testing of metals and alloys and of protective coatings.

(2) Fundamental studies of the emissivity of cathode nickel.

(3) Durability of concrete and of bituminous materials.

(4) Load-bearing properties of soils.
(5) Impact testing of plastics.
(6) Processibility tests and tests for resilience, etc., of rubber and rubber-like materials.
(7) Identification of inorganic elements and additives in lubricants.
(8) Properties of gaseous fuels and of coal and coke.

New technical and administrative committees are continually being formed to plan and carry out work in fields where this is desirable. Some relatively new projects include ultimate consumer goods, testing under conditions simulating actual service, so-called sandwich materials, asbestos-cement products, engine anti-freeze, and quality control.

1500 Specifications Published

In its 45 years of standards development, the ASTM has issued some 1500 widely used specifications and methods of test. Published in the ASTM Book of Standards issued at three-year intervals, they now aggregate more than 7000 pages. This book is printed in five volumes, each of which covers the standards in given fields. The five parts include ferrous metals; nonferrous metals; nonmetallic materials—construction-al; nonmetallic materials—coal, petroleum, soaps, textiles, water; nonmetallic materials—plastics, rubber, paper, electrical insulating materials. As new developments take place, the standard requirements are revised and incorporated in the annual Supplement to the Book of Standards.

Proposed new standards or revisions of existing standards originate in the committee having jurisdiction over that project. Committee D-2 on Petroleum Products, for example, has jurisdiction over the work of ASTM standards for gasoline and oil. Following detailed study of proposals, recommendations are successively acted upon by the subcommittees and standing committee concerned. A proposed standard is then submitted to the Society for approval and publication, either at an annual meeting or through action by the Administrative Committee on Standards. If approved, the specification or test method is published as tentative for a year or more to induce criticism and comments which are considered before the committee recommends that the tentative document be adopted by the Society as a formal standard. Each standard before adoption is submitted to letter ballot vote of the entire Society membership and a two-thirds favorable vote is necessary.

ASTM

A test for the determination of organic saponifiable substances by ether extraction in acid solution is in progress in the photograph above.

It is the policy of the ASTM to cooperate with other organizations both in standardization work and in research activities wherever a common interest exists. Accordingly, the Society has joined with other national bodies in many projects. These frequently take the form of joint committees. The Society has cooperated with such bodies as the American Society of Mechanical Engineers, American Foundrymen's Society, branches of the American Welding Society, Society of Automotive Engineers, American Chemical Society, American Ceramic Society, American Institute of Mining and Metallurgical Engineers, American Society of Heating and Ventilating Engineers, and others.

Some of these projects are organized as sectional committees under the procedure of the American Standards Association, and the ASTM cooperates with other national associations and societies in developing American Standards through this procedure. The ASTM is itself sponsor for many of these ASA projects. In some of these cases, the ASTM committees, in addition to preparing standards for approval by ASTM, serve as technical committees which prepare recommendations for the consideration of ASA sectional committees.

In other cases, standards developed and issued by the Society are submitted to the ASA to be considered for approval as American Standards under an established procedure known as the Existing Standards Method. Under this method the American Standards Association reviews the membership of the ASTM committee and the vote of the committee to determine that it represents a national consensus of all producer and user groups and any other that may have an important interest in the standard.

Standards in Business

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IT is a long time since a Greek philosopher remarked that men cannot hope for success in life without a knowledge of standards, but it is just as true today as it was 2,400 years ago.

Standards help the school pupil, the beginner at work, the master craftsman, the shop foreman, the general manager, and the president; they guide professional men and statesmen; they are of use to everyone in judging sports, work, and goods for sale.

There are people who rebel. They don't like this or that rule, though a million others may approve it. If every rule and convention and standard objected to by someone were wiped out, there would be a state of confusion worse than that in Alice's Wonderland, where people made up their own rules as they went along.

Many volumes have been written on every phase of standards. These have set up new aims, clarified old ideas, and built ideals of high principles yet to be attained. This short article is designed to draw attention to only one kind—the kind useful in producing, buying, and selling.

Standards perform two functions: they enable us to identify goods and grades, thus buying with greater certainty of getting value for our money, and they enable the producer to make more goods with the same effort and investment, thus spreading commodities over a wider area at prices within the reach of more people.

What Is a Standard?

A standard is something established by authority, custom, or general consent, a unit of measurement of some sort, against which an actual object or deed may be judged. The standard is something "right" or "correct" or "conforming to justice." Standards are set for the basic units of length, weight, and energy. There are standards for the nutritive value of food, the use of drugs, and safety in the preparation and packing of canned goods. Makers agree on standard dimensions of parts which must fit together, such as a light bulb and its socket.

There are standards of identity, quality, and quantity. The first describe the characteristics a product must have in order to be called by that name; quality standards measure the commodity against a mark indicating perfection; and quantity standards assert, for instance, that cans and jars must contain such-and-such proportions of fruit and liquid. When you buy silverware with a full-length picture of Britannia on it, you know that you are buying silver of the period 1697-1720 which has 11 ounces 10 pennyweight of fine metal to each 10 pennyweight of alloy.

Dimensional standards have been reduced to very close limits. A wonderful technical accuracy, provided by expensive machinery operated by skilled workmen, cuts and grinds and fits adjustable parts true to the ten-thousandth of an inch. How different this is from the yard-length standard which was set by King Henry I in 1101, when he decreed that a "yard" should be the length of his arm!

As we have moved along in mechanical knowledge, we have continued to trail in our wake some standards which would not be logical according to our present knowledge, but which are so woven into the web of our lives that they cannot be dispensed with. We measure steam and electric energy by horse power, and electric light by candle power. But new ways of measuring have been devised. For example, the United States Bureau of Standards broadcasts standard frequencies and standard time continuously from station WWV. These signals provide a common unit of frequency measurement both in the radio spectrum and

the audible range, and a standard one-second time interval. This standard is checked astronomically, so that the error is less than one part in ten million. One practical use of the standard audible frequencies might be in tuning a piano. The tuner would carry his portable short-wave receiver to the job, and, using the standard frequency corresponding to A above middle C from the WWV broadcast, he could tune the piano to agree precisely with any other standard instrument.

Why Set Standards?

There are two ways of standardizing: we may standardize ourselves to unalterable facts around us, or we may standardize the outside facts. Some animals stay where they are in winter and grow thick fur to keep out the cold; others suit the climate to their taste by picking out the weather they want and migrating to where it is.

There is no better example of standardization than in nature. Organized life would be impossible without it. Some persons may point to the wide differences between animals, birds, fish, and plants, but it should be noted that within each species there is the most minute agreement of structure and function. If human beings were not standardized in their anatomy, there could be no surgery, because the surgeon would not know where to look for an organ.

Upon this standardized basis there is built a great diversity of appearance, a circumstance which provides a hint for standardization in production and commerce. One of the most important characteristics of merchandise from the sales viewpoint is attractiveness. Nature shows that this need not be sacrificed when standardization is adopted. All the working parts, upon which efficiency depends, may be cast in the same mold but dressed in different ways. When a firm has the reputation of producing a dependable article which works according to a high standard of efficiency and length of service, then it does not have to stress this aspect of its goods, but can concentrate upon the competitive attractions of pattern and "frills."

Standardization is the key to mass production. In this sense it means using the same design to make parts so that they can be assembled readily into a completed product. The more standardized the product, the more continuous the operations; and the larger the scale of production within limits, the more cheaply and plentifully can goods be turned out.

Benefits of Standards

In times of peace, standardization may mean that the manufacturer will have less capital tied up; greater volume of production, with lower costs; more efficient inspection and consequently better customer satisfaction; reduced accounting, record, and office cost; and a more even flow of production providing improved service to purchasers in quality and in promptitude of delivery. It is obvious that a standard way of assembling a watch or an automobile will give better returns in terms of quantity and quality than a haphazard way. The problem—one of the most interesting facing manufacturers—is to know when to change the pattern. How far can the manufacturer of a washing machine go in keeping up with engineering progress and popular fancies without bankrupting himself by scrapping expensive tools?

There are many benefits to the consumer through standardization. Let us start with one commonplace which is not enough emphasized—the fact that developments in science and technology which simplify production make it possible to place on the market many different commodities at a wide spread in prices, making them available to a broad range of customers. These buyers are given great freedom of choice, and even if they cannot buy all that they see, they can select the items which will give them the greatest satisfactions.

It is said that we could increase the purchasing power of our incomes by 25 percent or more if the buying methods of individuals were as well developed as our methods of production and distribution. It cannot be denied that a more careful selection of goods on the basis of their ability to satisfy specific wants would go a long way toward increasing the real income of any family. This would mean a change from emotional and uninformed buying to buying according to standards in terms of price, value, and usefulness. That there is

A. Devaney, Inc

Technical accuracy which allows for the cutting, grinding, and fitting of parts true to the ten-thousandth of an inch is now possible.

such a trend is evidenced by the increasing demand for information about the quality of products. Even if a woman buys a dress mainly for its style, she will be put out if it shrinks so badly on its first cleaning that she cannot wear it.

Consumers cannot write specifications of what they want in the way of radios, typewriters, or clothing, and then call for bids, but they can have their own ideas of what they desire and check these against the standards of the products on the market. They will naturally wish to know: What quantity do we get? Will it do what I want it to do? Is it efficient? Is it safe to use as I intend to use it? What is its worth relative to other things?

Any housewife can illustrate the pertinence of these questions. She cannot standardize her work in the kitchen unless the things she uses are standardized. The ingredients of a cake must be so uniform that a level teaspoonful from one package today will give the same result as the same quantity from another package of the same brand yesterday. The housewife must know what to expect of her electric apparatus in the way of load-bearing and performance. She cannot test every article bought, and so she must rely upon the standards of the manufacturer.

It must be said that standards are only useful insofar as they are intelligently used by the consumer. A camera of a high technical standard may take wonderful pictures for the man who knows how to use it, while for an amateur it may be no better than a box with a pinhole in it. Automobiles are built to certain standards, but one need only stand at a street corner to see how standard equipment can be abused by nonstandard use.

Signal Corps Photo

Standards are useful only when they are used intelligently. A camera of high technical standard, for example, is of value only to the man who knows how to use it. Much standard equipment is abused by nonstandard use.

Charles Phelps Cushing

To know what to expect of the electric apparatus she uses in her home, the housewife must rely on standards.

Standard Sizes

Standardization can remove hazards and exasperation in other fields than those of quality and function. Take sizes, for example. Few persons wish to have their clothing standardized like uniforms, but everyone would welcome a uniform way of describing sizes. Ten years ago the United States Bureau of Home Economics measured 147,000 children, and as a result revealed that height and girth of hip are the best indicators of a child's size, though age had been used from time immemorial. Under a standardized size-by-measurement system of buying clothes, fitting can be based on facts instead of such guesswork as "Judith is eight, but I think she takes an age ten."

This matter of intelligent sizing can be of economic worth to manufacturers and retailers. When size is taken for granted, because purchasers can rely upon a simple standard, the manufacturer can emphasize style and quality which are better selling points; he can operate with greater efficiency and lower costs, and consistent use of the same set of standards will promote trade confidence. The retailer's stock will keep its appearance better, because there will be fewer try-ons and less handling. There will be fewer returns, not only to retail stores but to mail order houses.

Next to sizes, since we are talking about clothing, wearing qualities, color fastness, and shrinkage resistance are important. It has been suggested that textile manufacturers, shirt makers, retailers, and laundrymen should get together to establish a standard for, say, men's shirts. Specifications set by a standard laundering method could be imprinted on the shirt, indicating that it would take ten, twenty, thirty, or more launderings.

Standards are important particularly to producers and tradesmen who take a long-term view of their businesses. They realize that customer satisfaction is the best builder of future sales. Consequently, people in business are realizing more and more the necessity of giving purchasers adequate information upon which to base judgments of value and usefulness.

With top management aware of the need for high standards, and craftsmen working under the best practicable conditions, more will be accomplished through the state of mind permeating the plant than by

all the gages, instructions, and inspections that can be devised. A man who knows the highest standards and best methods in his job, and has professional pride and a sense of craftsmanship, will not care to fall short of the best results. This was exemplified by the reputation won by the livery companies of the City of London. The Goldsmiths' Company received its powers of assay in 1327, and the "hall mark" of the Goldsmiths' Company is still of worldwide recognition on gold and silver plate.

Charles Phelps Cushing

Standards must be chosen with care because they often tend to become permanent. It would be a difficult task today to try to change such standards as weights and measures or the gage of railway track.

Qualities of Standards

Standards need to be simple, rational, permanent yet flexible, and definite. We need to translate all standards, contents of packages, warranties, and warnings into language which can be understood by the consumer. Uniform grade names are wanted, so as to give consumers the information regarding quality.

Standards must be chosen with care, because they tend to become permanent and in some fields might incline to freeze progress. It would be difficult to change such standards as weights and measures, the gage of railway track, and the gage of screw threads, though many of them could be improved if change were possible. Within an industry itself there is a different criterion. Standard machines and designs and methods are merely the best that are known at the time, and are subject to change whenever better tools and methods can be found. The standards in which the consumer is most interested—those of quality in the finished product—should have a permanence that can be relied upon.

ASTM

Standard machines and designs are subject to change whenever better tools and methods can be found.

Movements for Standards

Many movements which have been started toward creation of standards in various fields have succeeded well. Some are associated with trade interests, others with professional groups, and still others have no connection except with the welfare of consumers. In the first group are trade associations, better business bureaus, retailers' bureaus of standards, and magazine "institutes." In the second group are such organizations as medical associations. In the third group are consumers' clubs and various women's groups.

After the first world war the Canadian Standards Association was set up by the Canadian Manufacturers Association, professional engineering societies, and representatives of industry. It fixed standards which have been accepted in the electrical, metallurgical, and building and construction fields. The Canadian Engineering Standards Association was formed to coordinate the efforts of producers and consumers for the improvement and standardization of engineering products, to promote the general adoption of engineering standards, and to register distinctive marks and names applicable to meterials or products which are in accordance with standards. Publication this summer of the Fifth Edition of the Canadian Electrical Code, Part 1, is evidence of continuous work on nation-wide standards in the wiring of buildings and the installation of electrical apparatus. The National Office Management Association, which has branches in several Canadian cities, has set up a committee to consider standards in office furniture, paper, forms, records, and procedures, supplies, and business machines.

Canadian Standards Division

Canada, which was the first country to have special legislation for canned foods, has this year taken another step in standardization by setting up a Standards Division within the Department of Trade and Commerce. This Division has to do with standards for size and quality of commodities not already regulated by other government departments, and the "Canada Standard" symbol ("CS") it will authorize will represent that the goods so marked conform to the requirements established under provisions of an Act of Parliament. Establishment of this Division means that specifications for textiles, clothing, and household equipment, for example, may be set up, and manufacturers who meet the

standards may use the national trade mark. The standards will be determined by the National Research Council, and "CS" will be a guarantee as to quality, size, quantity, and genuineness.

In introducing the new Division, the Deputy Minister of Trade and Commerce warned against expecting tremendous changes all at once. Adoption of standards will be purely voluntary and will come about as a result of agreement between manufacturers or because of consumer demand. "An essential part of the plan," he said, "is to have such an enthusiastic acceptance on the part of buyers that there will be a real demand for products made to the prescribed specifications."

Grading of Goods

This new Division may establish grades for any commodity falling within its jurisdiction, and recommend methods of designating the grade. Many goods already are graded according to quality, and the trade is marked on the container or the article. This plan has several advantages. Buyers are informed in regard to the articles offered, and misunderstanding is prevented. Producers of high-class merchandise are protected against the competition of poorer products.

Beef, butter, fruit, and other foods are graded under regulations established by the Dominion Department of Agriculture, and complete information is included in a booklet entitled "Buy By Grade" available free from that Department.

Besides the satisfaction of knowing the quality of goods sold by grade, the housewife has the advantage of being able to select food economically. She may decide, knowing what the various grades mean, whether she should pay the extra amount for a higher grade, or whether a lower, cheaper grader will do for the purpose she has in mind. Some, of course, may suffer from what Dr Paul Agnew, secretary of the American Standards Association, called an inferiority complex which compels them to buy the most expensive grade always. This may appear laughable to practical-minded people who recognize that there is no sense in buying canned whole fruit if the purpose is to put it through a squeezer, but it is no joke to the producer. It is, as Dr Agnew says, a good thing that the retail trade does a job of "softening this emotional situation for us by blurring for our vision the harsh grading lines which the wholesale market finds useful."

Labeling Standards

A considerable number of manufacturers include useful information about the product on their labels. Purchasers are inclined sometimes to confuse grade marking with trade marking. These are not the same, though hundreds of manufacturers have established their trade marks as sure-enough grade marks. These firms have demonstrated the advantage of making the brand name or other designation a symbol of high standard merchandise, and it is not uncommon to hear people say "If it's So-and-so (brand name) it's OK." Such a reputation built for a brand or trade name is worth many thousands of words of high-sounding phrases which convey no real information.

It is not a simple thing to decide what information to include on a label. A statement of physical or chemical content which would be quite clear to an expert might mean nothing to the ordinary buyer, and it is difficult to translate technical data so that it will mean the same thing to all consumers and not be misleading. In some cases it is hard to get all members of an industry to agree on a standard form of language. The word "pure" may mean in various uses: free from blemish, unadulterated, sheer, or simply "good."

Advertising Standards

Somewhat similar difficulties meet the manufacturer in advertising. It is axiomatic that if consumers are to get a maximum of satisfaction from their expenditures they should have an opportunity to appraise the probable satisfaction that will attend their choice. Consumers need advertising as a directory of up-to-the-minute information about goods. Without advertising, large-scale production, wide distribution, low prices, and a high standard of living would be impossible. But advertising performs its function only when it is educational, a broadcaster of news, and a dependable guide.

Thoughtful consumers welcome precise, specific information about the product's qualities and performance. They need all the facts which will help them to judge what is the best value for the money and most suitable for their needs. It is quite possible that greater attention to the making known of quality standards and durability of goods might contribute a vitalizing element to the advertising technique of concerns willing to be specific in telling the qualities which their goods possess.

Standardization Difficulties

It would be strange if there were no difficulties in the way of setting up and operating standards. Even nature makes mistakes in carrying standardization too far. Having found how to reproduce things in great numbers, nature proceeds without reserve: look at the way dandelions, grasshoppers, bud worms, and rabbits multiply. Each is perfect to its own standard, but there are too many of them. The fault is not in the idea of standardization, but in its use.

Some persons fear regimentation. They confuse different aspects of things. Every man is standard, every tree is standard, and yet no two men and no two trees are exactly the same. It is inconceivable that Canadians should ever tolerate being fed alike, housed alike, clothed alike, but they might welcome standardization in the sense of a guarantee of certain specific qualities attaching to food, houses, and clothes.

A man will stand having his suit standardized as to the number of pockets and the number of buttons, but he wishes to choose his material and his right of decision as to the finer points of cutting and fitting. "His wife's clothes are apparently standard only in the distance her skirt must be from the floor," remarked K. H. Condit in an article in the Annals of the American Academy of Political and Social Science away back in 1928. (Around that time the height was hovering between 15 and 17 inches; fashion designers say that this fall's late afternoon dress hems will be 10 inches from the floor.)

Freedom of choice and changing styles provide the greatest safeguards against useful standards degenerating into regimentation. Standards present facts upon which people can exercise judgment, but their judgment is moved by their desires. When consumers are willing to pay for variety and uniqueness, there is no fear of manufacturers going too far in standardization. The consumer is not merely a customer: he is a compendium of biology, psychology, economics, and many other sciences and some of the arts. A makeup like that does not lend itself readily or willingly to regimentation.

Modern Improvements Made In Slotted and Recessed Screw Heads

By F. P. Tisch

INTERCHANGEABILITY, the foundation on which modern mass production is based, is a result of standardization. Standardization in turn is founded on the agreement of qualified individuals as to what constitutes the most practical and economical specifications covering an extensively used product. The evolution of nationally accepted standards demonstrates the necessity of definite specifications for an article, as the existing confusion due to variation in designs, sizes, and qualities becomes apparent.

When such a condition exists in an industry, manufacturers' organizations or engineering societies associated with the product usually institute a standardization program. Since a standard approved by the American Standards Association is more widely accepted, these organizations act as sponsors for the development of the standard and form a committee, members of which are chosen because of their knowledge and experience in the manufacture and use of the product. The usual detailed procedure in formulating and obtaining approval for a typical standard is illustrated in this article.

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***F. P. Tisch**, chief engineer of the Pheoll Manufacturing Company, is chairman of Subcommittee No. 3 of the Sectional Committee on Standardization of Bolt, Nut, and Rivet Proportions, B18.*

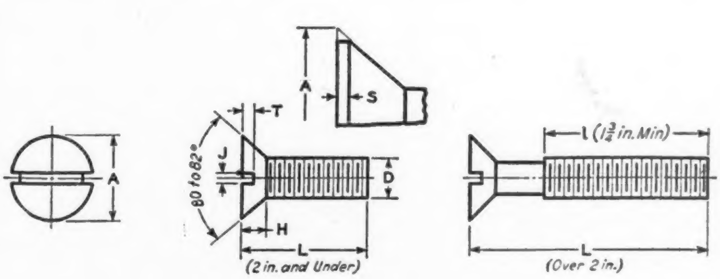
The period of increased mechanical activity before World War II made it more and more evident that the former American Standard, covering slotted head proportions for machine, cap, and wood screws, was inadequate for the newer uses of threaded products. Recognition of this situation prompted the American Society of Mechanical Engineers and the Society of Automotive Engineers to create a committee to consider the existing standards and develop such additional standards as were necessary.

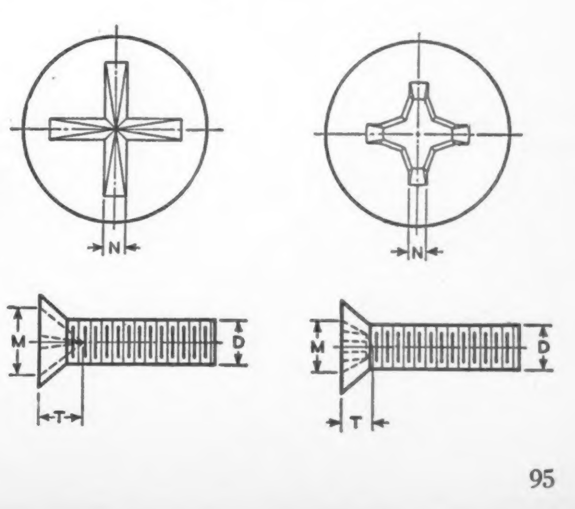
Many Industries Represented On Subcommittee No. 3

This committee was selected from men in the automotive, aircraft, electrical, railway, and stove industries, as well as manufacturers of the screw products. This committee, known as Subcommittee No. 3 of ASA B18, held its organization meeting on the 14th of April 1942. The scope of the subcommittee was defined as the complete product specification of all screws that were commonly driven by suitable slots or recesses. Included in these products were machine, cap, wood, tapping and headless set screws.

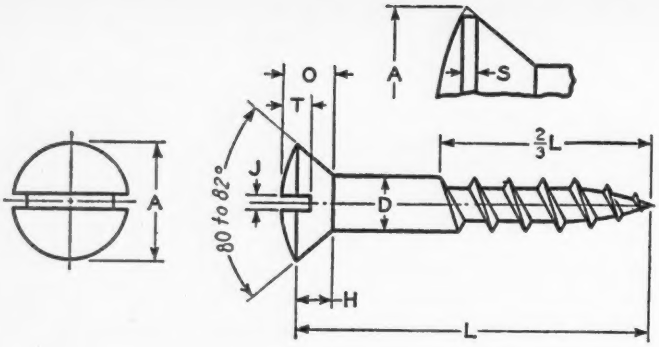
In order to expedite the work, two subgroups were appointed, one to cover all of the head, slot, and recess dimensions, and the other group to cover all of the other elements of the various products. Ten meetings were held during the ensuing five years, resulting in the tentative standards covering machine, cap, wood, tapping, and slotted headless set screws.

A tentative proposal for the revision of this standard was distributed to industry for criticism and comment in April 1945. It was also distributed to the members of Subcommittee No. 3 in advance of this committee's meeting on June 8th. At succeeding meetings of a special editing committee further revisions were incorporated resulting in a May 1946 draft which was prepared for use in securing the letter ballot vote of the Sectional Committee. The Screw Industry Standards Committee, U. S. Machine Screw Service Bureau, cooperated in the preparation of the data and approved the work developed at its meeting on November 16, 1945.





Above, dimensions standardized for slotted flat head machine screws. Right, dimensions standardized for recessed flat head machine screws.



Dimensions standardized for slotted head wood screws.

Following the approval of the Sectional Committee, the proposal was submitted to the sponsor organizations for their approval. Formal acceptance of these bodies followed and the American Standards Association gave its approval and designation as an American Standard on April 22, 1947.

This standard differs from the one previously published in April 1930 in that the range of sizes for machine screws is from size 0 to ¾ in. diameter, and several new head styles have been added, as well as dimensions for recessed heads, tapping screws, and slotted headless set screws.

Not All Products in Standard Are Stock Production Sizes

The inclusion of this additional data is not intended to imply that all of the products described in the standard are stock production sizes. Consumer interests are requested to consult manufacturers' catalogs for lists of stock production sizes for the various types of products.

In order to reduce the necessity of several screw drivers for each screw, it was found advisable to specify a single slot with adequate tolerances for each size or diameter of screw regardless of type or head style.

General data were established covering such features as angularity and eccentricity of heads, fillets, slot depth measurement, unthreaded shank diameter, length tolerance and standard method of measurement, thread lengths, point specification, classification of threads, and finish.

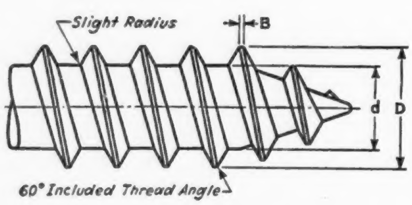
Round, flat, fillister, and oval head machine screws were included in the former standard. Modern requirements for machine screws justified the addition of truss, binding, pan, hexagon, drilled fillister, and 100 degree flat head types. The wide usage of cross-recessed heads led to the inclusion of the two types in the standard.

The flat head cap screw table is extended from the ¾ in. size to include the ⅞ and 1 in. sizes, and the former designation of button head was changed to round head. Dimensions for the unthreaded shank of cap screws were added to all tables.

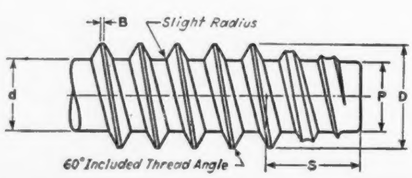
The tables for wood screw dimensions were improved by the addition of the number of threads per inch for each size.

Complete specifications for three types of tapping screws have been established, namely; type A, gimlet point; type B, blunt point; and type C, which has a machine screw thread with a blunt tapered point. The head styles for tapping screws are indicated in the table of contents of the standard.

A complete specification for slotted headless set screws has been added to the standard with all point specifications in agreement with the socket head types.



Standardized dimensions for tapping screws, Type A.



Standardized dimensions for tapping screws, Type B.

The membership of Subcommittee No. 3 of ASA B18 is as follows:

Users:

- E. J. Almquist, United States War Department
- D. W. Bennett, George D. Roper Corporation
- R. A. Frye, Westinghouse Electric Corporation
- J. W. Jenkins, United States Navy, Bureau of Ships
- W. H. Korff, Lockheed Aircraft Corporation
- F. E. Richardson, United States Army Air Forces
- V. R. Willoughby, American Car and Foundry
- K. D. Williams, United States Navy, Bureau of Ships
- W. L. Barth, General Motors Corporation
- H. A. Marchant, Chrysler Corporation
- G. W. Marquart, Western Electric Company
- J. J. McBride, American Car and Foundry
- W. C. Mueller, Western Electric Company
- H. W. Robb, General Electric Company

Producers:

- F. K. Brown, *Chairman Subgroup No. 2,* Continental Screw Company
- H. C. Erdman, *Chairman Subgroup No. 1,* National Screw Company
- J. F. Fieg, United Screw and Bolt Corporation
- H. G. Muenchinger, American Screw Company
- R. H. Perry, Progressive Manufacturing Company
- E. P. Swain, Corbin Screw Corporation
- F. P. Tisch, *Chairman, Subcommittee No. 3,* Pheoll Manufacturing Company
- W. G. Waltermire, The Lamson & Sessions Company
- C. A. Werme, *Secretary, Subcommittee No. 3,* Reed and Prince Manufacturing Company

The subcommittee appreciates the assistance of the following:

- W. M. Hanneman, Shakeproof Division, Illinois Tool Works
- L. Oest, Parker Kalon Corporation

The American Standard for Slotted and Recessed Head Screws, B18.6-1947, was published by the American Society of Mechanical Engineers, 29 West 39th Street, New York 7, New York, and is available at $1.00 per copy.

Association Is Incorporated Under New York State Laws

THE final steps in the incorporation of the American Standards Association under the laws of the State of New York will take place about August 2, changing the Association to the American Standards Association, Incorporated.

Incorporation was undertaken by the Board of Directors in accordance with the mandate from the Member-Body Conference which directed that incorporation under a state law be undertaken without delay in order to secure the protection for the Member-Bodies and the Board of Directors which corporation law affords and which was considered essential in the light of the scope of the Association's activities.

As a corollary to the state incorporation, it has been necessary to accept the resignations of those Member-Bodies which are departments or agencies of the Federal Government, since legal considerations prevent their accepting membership in the Association incorporated under the laws of a state. Advice from the several departments and agencies indicates their desire to participate as fully as possible in the technical activities of committees organized under ASA procedure. The resignations of the Government departments as Member-Bodies have carried along with them the resignations of Dr E. C. Crittenden, Associate Director of the Bureau of Standards, as chairman of the Standards Council and as an ex-officio member of the Board of Directors; of Clifton E. Mack, Director of the Bureau of Federal Supply, as a member of the Board of Directors; and of Willis MacLeod, Executive Secretary of the Federal Specifications Board, as a representative of the Treasury Department on the Standards Council.

L. F. Adams of the General Electric Company, a representative of the National Electrical Manufacturers Association, vice-chairman of the Standards Council, becomes chairman upon the resignation of Dr Crittenden. There will be later announcements of other incidental changes in the personnel of the Board of Directors and the Standards Council.

Kenney to Address ASA's Annual Meeting Luncheon

The Honorable W. John Kenney, Under Secretary of the Navy, will address members of the ASA Standards Council and Board of Directors at a joint luncheon in the Wedgwood Room of the Waldorf-Astoria Hotel on October 22. This will be one of the highlights of the American Standards Association's 30th Annual Meeting, scheduled to be held on October 20, 21, and 22.

Foundrymen's Association Is Now "Society"

The American Foundrymen's Association has voted to change its name to American Foundrymen's Society. William W. Maloney, secretary-treasurer, announced the change effective July 1.

"The term 'society' is generally applied to an organization that has such specific aims as ours—to advance the arts and sciences relating to the manufacture and utilization of metal castings—together with a close association of its members in chapters and committees, as well as in their work, and the active participation of the members in local, regional, and national technical-educational meetings, researches, and other undertakings," he said.

Good Packaging Specifications—An Important Economy Measure

UNLESS a company studies its packaging specifications from time to time, it cannot possibly know its costs, or how to cut them, and cannot make improvements in its packaging to encourage better sales and more profits. This was the theme of an address by Harold F. Coleman, Rexall Drug Company, at a conference on packaging, packing, and shipping of the American Management Association.

The operation of any manufacturing organization producing finished packages can only be at its highest efficiency and lowest cost if the following procedure is followed, says Mr Coleman:

Set up finishing specifications for each part of the package;
Have these specifications in such form that anyone can understand them;
Give the purchasing man standards on which to buy and pass on to the supplier.

When assembling the completed article, Mr Coleman recommends centralized control in the hands of one man or one department. Each part of the package should be given its own code number and control number. These should then be assembled into a working specification sheet of blueprint form from which copies can be drawn and used in the production department of the organization.

The development and maintenance of specifications is not an easy task. Often, too, it involves considerable expense. However, emphasizes Mr Coleman, the losses which occur due to lack of specifications far exceed any possible cost that may be entailed in setting up and maintaining specifications.

NFPA Elects New Officers

John L. Wilds, president of Protection Mutual Fire Insurance Company of Chicago, was elected president of the National Fire Protection Association at its annual convention on May 13.

A. H. S. Stead of Montreal and Russell Grinnell of Providence, R. I., were elected vice-presidents, and Hovey T. Freeman, also of Providence, became secretary-treasurer. The new chairman of the board of directors is George W. Elliott of New York.

Contractors' Group Approves Revisions In Concrete Mixer and Pump Standards

SEVERAL changes in the Concrete Mixer Standards and the Contractors Pump Standards, as recommended by the Mixer Manufacturers Bureau and the Contractors Pump Bureau, have been put into effect by the Associated General Contractors of America. Both bureaus are affiliated with the contractors association through the AGC Cooperative Construction Bureau and these changes were approved at the association's twenty-ninth annual meeting in Dallas, Texas.

The changes in this eighteenth revision of the Concrete Mixer Standards were made to more clearly indicate that the size numbers represent nominal capacities and that the guaranteed capacity is the factor that governs. No changes in sizes, capacities, or standard rating plates attached to the machines will result.

Changes in the fourth revision of the Contractors Pump Standards will increase the capacity of some of the standard self-priming centrifugal pumps. They will also provide a better range of engine sizes and improve the line of standard self-priming centrifugal pumps as a whole.

Manufacturers in the Mixer and Pump Bureaus have cooperated with the AGC for many years in maintaining and improving standards deemed desirable to promote the best practice for the construction industry.

In conjunction with the annual convention of the AGC, the Joint Cooperative Committee of the American Association of State Highway Officials and the Associated General Contractors of America also met in Dallas. During a discussion on standardization, it was agreed by the engineers and contractors that there is a great need for the states to give attention to standardizing as many items as will obtain greater economy. Difficulty was reported by some contractors in obtaining standardization of various items.

A. C. Clark, chief of the Division of Construction, Public Roads Administration, told the joint committee that he was interested in standardization of as many materials as possible, such as curbing, forms, and wire mesh. He said that too many types of specifications are being developed by the various states "which are difficult to deal with."

Harry J. Kirk, manager of the AGC Highway Contractors' Division, pointed out the need for more use of local materials, and the wide variations in culvert design and types of wire mesh. He said it may be advisable for the Highway Research Board to make a study of structures with a view toward recommendations for standardization.

New Report Urges Adoption of N. Y. Pier Building Code

Recommending once more the early adoption of a New York City pier building code, the N. Y. Board of Fire Underwriters has issued a report —*The Pier Fire Problem in the Port of New York.*

According to the *Journal of Commerce,* this is one of the most complete studies ever presented. Pointing out that fire prevention at the waterfront has been seriously disregarded, the report cites the necessity for structural improvements and the preventative measures that should be adopted. Particularly needed are adequate sprinkler systems which can be prevented from freezing during winter months. Restriction of the horizontal spread of fire is listed as a major requirement in retarding and eliminating superstructure and substructure fires.

Undertake Research on Design Standards for Light Gage Steel

A research program undertaken by Cornell University for the development of proper design standards to govern the use of light gage steel as a structural material is discussed in the May issue of *Steelways* magazine. Entitled "Gage of the Future," copies of the article are available by writing to the American Iron and Steel Institute, 350 Fifth Avenue, New York, New York.

NBS Develops Standards Of Very Small Capacitance

The National Bureau of Standards has established standards and equipment for testing and certifying small fixed standards of capacitance ranging in value from 100 down to 0.001 micromicrofarads. This work has involved the development of a series of primary reference standards and the construction of several fixed secondary standards and variable capacitors. For values below 0.1 $\mu\mu f$, a new type of primary standard capacitor has been designed, utilizing a principle which makes practical the construction of units having a capacitance as small as may be desired.

The acceptance of many types of electron tubes by the research laboratories of the Armed Services, as well as by manufacturers of electronic equipment, is based upon measurement of interelectrode capacitance. Lack of standardization in capacity-measuring equipment has, in many cases, resulted in losses due to rejection by the purchaser of tubes whose interelectrode capacitance was not within the tolerance limits for acceptable performance. The result has been a demand on the part of industrial and government laboratories for secondary reference standards of small capacitance.

Such standards may be used in checking the calibration of bridges and test sets which in turn are used to measure interelectrode capacitance. As secondary reference standards employed by the testing laboratories must be compared with known standards, the Bureau was requested to establish and maintain a group of primary capacitance standards over the required range.

Commercial Standards Recently Issued By the National Bureau of Standards

New Commercial Standards approved recently by the Commodity Standards Division of the National Bureau of Standards have been received by the ASA. A few of these are reviewed below. Printed copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Automotive Lifts, CS142-47—

This standard covers hydraulic and mechanical lifts, including frameless suspension lifts, for outdoor and indoor installation in rated capacities through 75,000 pounds. It includes definitions, requirements for electrical equipment, and control mechanisms, as well as requirements for welding and for allowable design stresses with definite stress computation formulas. These lifts are the types regularly employed in raising passenger automobiles, trucks, and busses, in order to provide accessibility for convenient under-chassis service.

Hardwood Dimension Lumber (Second Edition), CS60-48—

Minimum specifications for solid and glued-up hardwood dimension lumber for domestic and export trade, made up in five grades of flat stock and four grades of squares, are provided for in this standard. It also covers a definition of the product, permissible defects, meaurement, and tolerances for rough, surfaced, semi-fabricated, and completely fabricated hardwood dimension lumber.

Men's Circular Flat and Rib Knit Rayon Underwear, CS148-48—

The purpose of this standard is to provide methods of measuring, standard measurements, and tolerances, in order to provide a more uniform basis for guaranteeing correct sizes. It applies only to finished garments.

Prefabricated Homes, CS125-47—

Minimum requirements for one, one-and-one-half, and two-story prefabricated homes are provided in this standard. It covers requirements for light and ventilation, space access and privacy, structural strength of the various component parts, thermal insulation and condensation control, and requirements for heating, plumbing, and electric wiring. It includes general requirements for materials, and workmanship, site erection and assembly of prefabricated units, and protection during transportation and erection.

This is a revision of a previous edition, issued in 1945. The changes bring it in line with current recommendations for building code requirements for new dwelling construction.

Standard Strength and Extra Strength Perforated Clay Pipe, CS143-47—

Nine sizes of standard strength perforated clay pipe are specified in this Commercial Standard, ranging from 4 to 24 inches nominal inside diameter, inclusive; extra strength perforated clay pipe is specified in 8 sizes, ranging from 6 to 24 inches nominal inside diameter, inclusive. Also covered are definitions, and requirements for materials, workmanship and finish, absorption, crushing strength, dimensions, and resistance to action of acids, for bell and spigot type glazed perforated clay pipe in both grades.

Testing and Rating Hand-Fired Hot-Water Supply Boilers, CS145-47—

Testing and rating of all sizes of hand-fired solid fuel-burning hot-water supply boilers except those of the magazine-feed type and laundry type are provided. Rating is expressed in Btu per hour, and in gallons of water heated 100 F in three hours.

Utility House Dress Sizes, CS149-48—

Effective for new production from August 4, 1948, this standard establishes methods of measuring and minimum measurements for women's utility type house dresses in sizes 12 to 52. A recommended shrinkage tolerance for the fabrics used in the production of these garments is also included.

SCPI Goes All Out To Promote Modular Products

For the first time in its history, the new directory of brick and tile manufacturers contains a list of those who make modular products. Available at the Structural Clay Products Institute office, 1756 K Street, N. W., Washington 6, D. C., the cost of the directory is $7.50.

The SCPI is also about to launch a new newspaper mat service which will bring the plans and elevations of modular brick homes to the attention of millions of readers.

A questionnaire sent to brick and tile manufacturers by the Institute revealed that there are now 125 manufacturers, producing 40 percent of the nation's brick and tile, who are using modular sizes in accordance with the American Standard Basis for the Coordination of Dimensions of Building Materials and Equipment, A62.1-1945. The makers of facing tile have converted 100 percent to modular production, according to SCPI figures.

Victor H. Tousley

Victor H. Tousley, secretary-treasurer of the International Association of Electrical Inspectors and electrical field engineer of the National Fire Protection Association, died on July 12.

Mr Tousley began his career as an electrical inspector for the City of Chicago and eventually became Chief Electrical Inspector for the city. In 1928 he was named secretary-treasurer of the International Association of Electrical Inspectors and the electrical field engineer of the National Fire Protection Association. Although the IAEI had been organized for some time prior to 1928, the activities of its various chapters had never been coordinated. Through the efforts of Mr Tousley, this organization has grown to the point where its members come from all parts of the United States and Canada.

For 15 years he had been secretary of the Electrical Committee of the National Fire Protection Association which also serves as ASA sectional committee C1. In this capacity he assisted in the compilation, amendment, revision, and publication of the National Electrical Code—one of the most widely used safety codes in the United States—the latest revision of which was approved as an American Standard in 1946.

Mobile Test Unit Aids Truck Lighting Experiments

To help develop adequate standards covering intensity, size, and location for truck lighting, the General Electric Company has developed a mobile test unit in conjunction with the Society of Automotive Engineers. Mounted on a panel are more than twenty lights in various sizes, colors, and intensities. Experts may then view these lights, singly or in combination, by day or night, from distances up to 500 feet.

Books Relating to Standardization

Dimensional Analysis of Engineering Designs — Volume 1, Components (Part 1) (Ministry of Supply, His Majesty's Stationery Office, London, England)

This volume attempts to establish a series of basic principles to guide designers and draftsmen in determining the most appropriate sizes, tolerances, and allowances for the components of any design intended for interchangeable production. These principles are explained early in the book; later chapters show how the principles can be applied to the solution of the various dimensional problems encountered in engineering design. Particular attention is paid to the treatment of components involving tapered, concentric, or groups of features of which the relative positions are important for satisfactory assembly with mating components.

This publication is the work of an Inter-Service Committee set up by the Ministry of Production in 1944 to establish for armament work a basic system for tolerances and dimensions on drawings of stores, gages, jigs, and fixtures of various degrees of precision, and to make recommendations as to how the principles and practices so established can be made known to and applied by the engineering industry.

Volume 1 constitutes a text book rather than a code of practice and it is intended to continue this work with a second volume giving more detailed recommendations for the application of the principles outlined in Volume 1. A third volume dealing with gages is already in course of preparation.

Industrial Health Engineering. By Allen D. Brandt (John Wiley & Sons, Inc, 440 Fourth Avenue, New York 16, N. Y., $6.00)

This summary of information concerning substances that contaminate the atmosphere in industrial plants and their control is intended for the use of plant engineers, construction and consulting engineering firms, and industrial hygiene engineers. It includes data on the design and installation of equipment for the control of occupational diseases. Among the many subjects discussed are such topics as local exhaust ventilation, radiant energy, plant sanitation, measurement of air flow in industrial ventilation, respirators, and protective clothing.

Heating Ventilating Air Conditioning Guide. 1948 (American Society of Heating and Ventilating Engineers, 51 Madison Avenue, New York 10, N. Y., $7.50)

The 26th edition of the *Guide* continues the tradition of previous *Guides* in presenting current engineering practice and up-to-date products of manufacturers. The book is composed of a technical data section of reference material on the design and specification of heating, ventilating, and air conditioning systems, based on the investigations of the research laboratory, cooperating institutions, and members of the Society; a manufacturers' catalog data section containing essential information concerning modern equipment; the roll of membership of the Society; and complete indexes to the technical and catalog data section.

The technical data are presented under eight main section headings: principles, human reaction to atmospheric environment, heating and cooling loads, combustion and consumption of fuels, heating systems and equipment, air conditioning, special applications, and installation and testing codes.

International Industry Yearbook. 1948 (Kristen-Browne Publishing Company, Inc, 551 5th Avenue, New York, N. Y., $10.00)

Subtitled the *Encyclopedia of Industrial Progress*, the *Yearbook* is an annual publication planned to summarize the technological progress achieved in the various fields of engineering and industry. It is intended to serve management, education, and the engineering profession by providing, in a single volume, the overall picture of the technical advancements throughout industry as a whole. This first issue of the *Yearbook* is not designed to accomplish a deep vertical penetration into a single field but rather to provide a broad horizontal review of significant industrial developments.

The subjects included have been chosen to cover the most significant developments in the major fields of industry. Such industries as electronics, chemicals, communications, petroleum, textiles, plastics, railroads, and materials handling are among the many adequately discussed by specialists who have carefully footnoted and documented their material. The topic of standardization, for example, has been handled by Howard Coonley, chairman of the executive committee of the American Standards Association.

Scientific and Technical Abbreviations, Signs, and Symbols. By O. T. Zimmerman and Irvin Lavine (Industrial Research Service, Dover, New Hampshire, $7.50)

The fact that both authors of the volume are best known for matters chemical shows how deeply this science concerns all technical fields. Professor Zimmerman and Professor Lavine are thoroughly familiar with the indispensable tools of the scientist and the technologist. Both, through their wide experience in industry, as well as in the educational field, fully realize that abbreviations, signs, and symbols are very important tools.

The dual purposes of the book are clearly stated in the preface—to make available in one convenient volume the principle abbreviations, signs, and symbols used in a number of scientific and technical fields; and to encourage greater uniformity in the use of abbreviations, signs, and symbols.

Naturally, the authors have made no attempt to harmonize the symbols used for different purposes or by different groups. They have, however, collected the best source material and assembled it in one volume. To the best of this reviewer's knowledge, no similar volume of such diversified data on abbreviations and symbols has ever before been compiled. Its usefulness seems unlimited. It would seem impossible to name a single individual in the scientific and technical world who would not find this book most helpful. The whole standardization movement has been helped by the publication of this volume.

—W. H. Deacy, Sr

Television—Volumes III and IV (RCA Review, RCA Laboratories Division, Princeton, New Jersey, $2.50 each)

In 1936, the Radio Corporation of America published the first volume in its technical series on television. This was followed shortly after by volume II. Additional books in the series were postponed because of wartime security restrictions. As soon as conditions permitted, however, RCA Review began its work on the compilation, selection, and editing of material for the next volume on television. It was immediately apparent that it would not be possible to "bridge the gap" between 1937 and 1946 in one book, so two volumes have been published at this time.

Since all of the available material on the subject could not be included in full form, careful selection of the material was most necessary. A number of papers are, therefore, presented in summary only, while it has been necessary to omit others entirely.

Television—Volume III, covering the period 1938-1941, presents papers on such topics as pickup, transmission, and reception.

Volume IV includes pickup, transmission, reception, color television, and military television. As a source of reference, the Appendix to this book also includes a television bibliography covering the period 1929-1946.

Briefs

• • Modular structural clay units measuring 4 in. by 4 in. by 12 in. and 8 in. by 4 in. by 12 in. are being used in the construction of the National Biscuit Company's modern new building in Houston, Texas.

• • The nucleus of a United States National Committee, to be affiliated with the International Commission for Uniform Methods of Sugar Analysis, has recently been formed. Information may be obtained from Carl F. Snyder, secretary-treasurer of the committee, National Bureau of Standards, Washington 25, D. C.

Swedish Exhibition Shows Benefits of Standardization

THIRTEEN of the largest industrial companies in Sweden joined with the Swedish Standards Association this spring in showing how standardization has benefited them as producers, as well as benefiting consumers and the trade in general. The demonstration was presented in an exhibition at the Swedish Fair at Gothenburg in May. Called "From Chaos to Comfort" it attracted some 150,000 visitors and received a great deal of comment from the newspapers and technical periodicals. A special radio program was presented on the opening day.

Ballbearings Produced According To International Standard

If all the different types of ball bearings requested had actually been made, the SKF ballbearing factory would have manufactured a round quarter of a million different types, the SKF exhibit showed. Through hard standardization work, it demonstrated, it has been able to keep the number of types manufactured down to 8,000. The international standard for ballbearings, consisting of 1,720 different types, is used for more than three-quarters of the total annual production of antifriction bearings.

ASEA, the largest Swedish electrical company, showed the advantages of its new lighting fixtures for industrial purposes. These are based on standardized details, which can be built in many different combinations. The company also took occasion to point to the advantages of having one single type of plug-in contact instead of 19 different types, such as are even now found in various parts of Europe.

The bicycle is widely used in Sweden. Nymanbolagen, bicycle manufacturers, showed the status of the present Swedish standards covering bicycle parts and details and the possibilities to be realized from their use.

Surte Glasbruk (glasswork) demonstrated new types of standardized glass jars and bottles.

The State Power Board showed a substation in which all parts and details had been standardized. Thanks to standardization, the station can be built up and changed very easily, it was explained. About 100 different details are in accordance with Swedish standards, the exhibit showed.

C. E. Johansson demonstrated the well-known gage blocks and showed snap gages and other gages in accordance with ISA tolerances.

Textilradet, a union of Swedish textile manufacturers, showed the use of standardized methods of test in connection with a declaration of quality to be placed on each textile sold. This declaration indicates the material—wool, silk, rayon—the tensile strength, and other properties which are of interest to the consumer.

Uddeholmsverken showed stamp dies and other tools made of standard qualities of Swedish steel.

L. M. Ericsson, the Swedish telephone factory, showed that a thorough standardization of details makes it possible to assemble a greater number of different combinations from standard elements than is possible without standardization. They also displayed successful standardization of switchboard plugs and other details. Through standardization, 20 different types of switchboard plugs have been reduced to one.

Sandvikens Jernverks AB exhibited their great assortment of tubes for different purposes—water, vapor, and highpressure gases—all made according to Swedish standards.

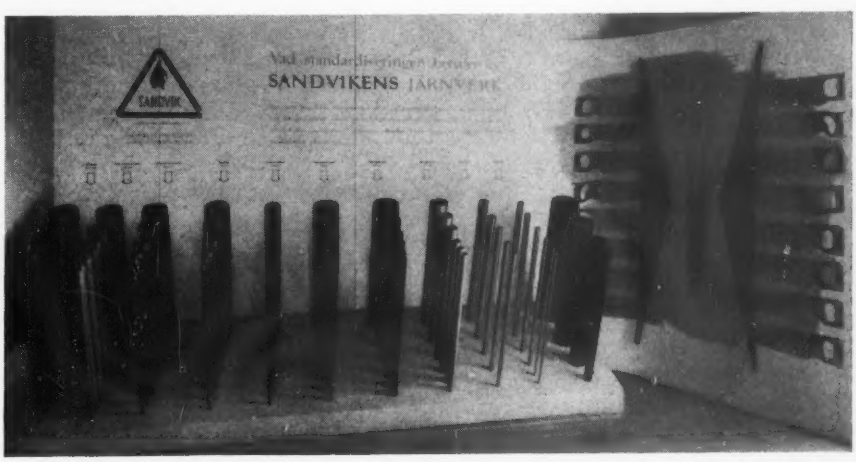
Models of the different screw thread systems for bolts and nuts were shown in connection with an exhibit of the newly issued Swedish proposal for international standards for screw threads.

In addition, the Swedish Standards Association had an exhibit showing how it is organized, how a Swedish Standard is developed, and the results of its work during the 25 years of its existence.

Australia Seeks Comments On Chemical Standards

Frequent requests to standardize chemicals for use as analytical reagents has led the Standards Association of Australia to seek comments on the following questions:

1. Should Australian standard specifications include a statement of required purity when specifying reagents for chemical tests?
2. Is any set of published specifications suitable for incorporation in Australian standard specifications?
3. Can the Australian chemical industry produce reagent chemcals to comply with such specifications?
4. Are chemicals complying with such specifications generally available on the Australian market?



All these types of pipe and tubing made by Sandvikens Jernverks AB are manufactured according to Swedish Standard. Seventy percent of the total production from Sandvikens Jernverk today consists of standardized products. To the right is a standardized timber saw replacing 192 predecessors.

West Indies Sets Up Its First Standards Institution

A West Indies Institute of Standards and Research has been formed in Jamaica, and all professional and technical institutions and associations throughout the British West Indies, as well as other British West Indian governments, have been invited to nominate representatives to serve on the Executive Council.

Major L. H. Charles, a consulting engineer affiliated with the Ross Institute of Tropical Hygiene, was elected chairman. I. D. Arscott of the Jamaica branch of the Institution of Civil Engineers was named secretary-treasurer.

The need for a standards institute was emphasized by Major Charles when he reported on the work he had been doing with the Ross Institute. He had been assigned to investigate the possibility of preparing and adopting standards and specifications, particularly with reference to housing, hygiene, and sanitation. As a result, some four or five draft codes on the use of native materials were already in preparation. He pointed out, however, that this was just a start; if standards are to play their essential part in the economic development of the West Indies, they must be developed and produced through the cooperation of all interested people.

Major Charles cited the importance of standardization in aiding the housing program—without standards, he estimated that it would take from 60 to 100 years to house all of the people in Jamaica—and to complete the job to be done on roads, water supply, soil erosion, drainage, and irrigation. Support of this work must come not only from interested associations and institutions but also from governments and the Colonial Development and Welfare Commission.

By agreement of the members, it was voted that contact would be made with other groups to ascertain the need for various items of investigation and research in all phases of civil engineering, public works, and building construction, including housing and sanitation. Following this, steps would be taken to ensure adequate research, personnel, and equipmene.

International Group Withdraws from ASA Safety Code Work

The American Standards Association has received with regret the resignation of the International Association of Industrial Accident Boards and Commissions as sponsor as well as member of the various safety code projects on which it has taken a leading part since the organization of the ASA safety work. The Association was one of the three organizations which were responsible for starting the safety code program through the procedure of the American Standards Association (at that time the American Engineering Standards Committee). In 1920, the IAIABC, the National Safety Council, and the National Bureau of Standards were named as a committee to make recommendations for such a program. As a result, the National Safety Code Committee was organized, followed by its reorganization as the Safety Code Correlating Committee in 1922. The Association has been a member continuously since the Committee was first set up.

At the time of its resignation, the IAIABC was also sponsor for seven safety projects and a member of 33 other ASA committees.

In submitting its resignation, the Association reported that its Executive Committee had recognized that in the process of evolution of the State governmental agencies during the last two decades the responsibility for code-making has, with but few exceptions, passed from the workmen's compensation authorities into the hands of the labor departments or equivalent agencies. For this reason, the Association has withdrawn from active participation in the safety code work. However, it continues to have an interest in the work and expects to cooperate wherever possible.

Swiss Translate Standards Titles

The Swiss standardizing body, in sending out its standards, now includes a list of the titles translated into English and Russian, as well as German and French. The standards themselves are still printed in the two latter languages.

Dr Lal Verman Heads Indian Standards Institution

Dr Lal C. Verman, well known to scientists in Great Britain and the United States for his many contributions to British and American periodicals, is the first director of the Indian Standards Institution, set up by the Government of India in 1947. Dr Verman is particularly well known for his research on the technology of lac which has had an important bearing on the wide industrial application of lac resin.

His work has also covered many aspects in the electrical, radio, and automotive fields. Important among his activities here are the development of a vacuum tube voltage regulator for large size d-c generators and a-c alternators, discovery of negative inductance and negative capacitance circuits, development of a loudspeaker to enable hearing by bone or air conduction, a loudness-measuring instrument for testing noisy industrial equipment, formulation of a theory of transients in negative constant circuits from the point of view of stability, and the development of a new system for automatically and continuously recording ionospheric data.

During recent years he has guided work on a large number of industrial problems. He is chairman of the Standards Research Committee on Producer Gas, appointed by the Government of India, and secretary of the Building Research Committee of the Council of Scientific and Industrial Research. In 1944, Dr Verman was appointed acting director of the Physical Laboratories of the Council of Scientific and Industrial Research.

Dr Verman has been visiting organizations concerned with standards in the United States in the past few weeks. An article by him will be published in our next issue.

Standards Received from Other Countries

INTEREST in standardization in all parts of the world has been on the upsweep since the end of the war, if the standards received by the American Standards Association from other countries are any criterion. Represented among the countries which have sent copies of their standards to the ASA this year are Austria, Australia, Belgium, Canada, Denmark, France, Germany, Hungary, Italy, Norway, Poland, South Africa, United Kingdom, Uruguay, and USSR.

Because it is important to American industry in supplying materials and equipment for other countries to know what standards are in effect, the Technical Service Engineer translates the titles and sends to each of the members of the ASA engineering staff copies of the standards in his field. The ASA engineers in turn call them to the attention of committees and companies which may have special use for them.

Members of the American Standards Association may borrow copies from the ASA, or may order them from the country of origin through the ASA office. Some of the more important standards received from each country since the first of the year are listed below. Although the titles of the standards are given here in English, the documents themselves are in the language of the country from which they were received.

Australia

Aluminum Alloy Sections, H46-1948
Compressed Air Code, CA12-1948
Identification Marking of Radio Receivers, CC6-1948
Metal Fittings for Porcelain Disc Insulators, Supplement of 1947, C67-1939

Austria

Brushes and Brush Holders for Commutators and Slip-rings. Tolerances. (Replaces Standard E5801), E4861
Carbon Brushes for Collector and Contact Rings, E4860
Circular Saw of Uniform Thickness for Wood, M4402
D-C Electrical Machines, Open Type, E4500
Electric Machinery. Designation of Various Types, E4900
Height of Machine Axis, E4811
Metric Thread for Diameter 1-68 mm, M1501
Round Tiles, B3203
Shaft Ends, Pulleys and Mounting Flanges of Electrical Machines (Insofar as Mounting Flanges are concerned this standard follows recommendations of the former ISA Technical Committees 13 and 39), E4800
Standard Transformers. Main Series (HET), 20-100 kva, E4700
Standard Transformers. Special Series (SET), 10-50 kva, E4701
Steel Casting, M3181
Terminal Clamps for Electrical Machines From 1.1 to 250 kw and Speed From 3000 to 500 rpm, up to 6 kv. (Replaces Standard E5828), E4910
Three-phase Oil-Transformers for Inside Installations. Dimensions (Replaces Standard E5202), E4750
V-Belts, Endless, M6515

Belgium

Insulated Wires and Cables for Overhead Lines, NBN155
Rubber Insulated Telephone and Signal Cables, NBN156
Specification Relative to Double-cup Insulators for Low and Medium Voltage, NBN28
Specification Relative to Monophase Transformers Used in Arc Welding, NBN157
Tee-Nuts and Tee-Slots, NBN142
Testing Methods NBN117 (This standard is subdivided into five parts) Tension Testing, NBN117.01; Bending Test, NBN117.02; Hardness Test, NBN117.03; Bending Test of Nicked Test Piece by Shock, NBN117.04; Bauman's Macrographic Test, NBN117.05

Canada

Standard Specifications for Power Transformers, CSA C88

Denmark

A-Poles, Traverses and Other Construction Details for Overhead Power Lines 10-15 kv, DS392.0 through DS392.9
Bed and Mattress Sizes for Adults, DS388
Screw Caps for Bottles and Glass Containers, DS391
Screw Threads for Glass Articles Diameter From 10mm to 125mm
Steel Casement Windows and Doors, Various Sizes, DS393 through DS398
Typewriter Ribbons, DS365
Varnish or Paint Tins, 1/16-10 1 Capacity, DS360
Varnish or Paint Tins, 20 1 Capacity, DS361

France

Acoustics, Optics and Miscellaneous—
16-mm Film Raw Stock for Silent Film. Dimensions, S24-102
Agricultural Equipment—
Ten Standards for Various Antiparasite Chemicals, such as Sulfur, Sodium Carbonate, Nicotine, etc, U43-001 through U43-011
Chemistry—
Classification of Pigments, T30-002
Flexible Rubber Tubes for Hydrocarbons, T47-113
Civil Engineering—
Electric Passenger and Freight Elevators. Rules for Calculation Metal Structural Work, P82-204
Domestic Economy—
Gas Kitchen Stoves, D32-325
Minimum Specifications for "Solid Type" Furniture, D60-301
Electrical Engineering—
Rubber Insulated Wires, C30
Specifications for Dielectric Tests at Usual Industrial Frequencies, C61
Fundamental Standards—
Calculus of Probabilities. Terminology, X05-004
Errors of Measurement. Terminology, X06-001
Statistics, Terminology, X05-003
General Basic Standards—
Standard Direction of Rotation of Machines, X02-151
Mechanical Engineering—
Copper Tubing for Refrigerating Liquids Except NH_3 and CO_2, E35-011
End Mills and Reamers Cylindrical Shaft, E66-014
End Mills and Reamers Morse Taper Shaft, E66-015
Expanding Reamers, Morse Taper Shaft, E66-016
Geometrical Tolerances for Spur Wheels, E23-006
Terminology and Marking of Machine Couplings, E01-101
Various Types of Pipe and Tube Joints, E35-032
Metallurgy—
Chemical Analysis of Ferro- and Silico-Alloys. Percentage of Aluminum, PM A06-215
Chemical Analysis of Steel and Casting. Percentage of Vanadium, A06-1314
Hot Rolled Square Blooms and Billets, A43-101; Hot Rolled Slabs, A43-102; Hot Rolled Flattened Billets, A43-103; Hot Rolled Flat Bars, A43-104

Hungary

Chromium Steel, Chromium-Manganese Steel, MOSz2664/5
Cold Rolled Zinc Sheets and Strips, MOSz718/9
Commercial Quality Steel Bars, MOSz337-9 and MOSz341-3
Commercial Quality Structural Shapes, MOSz323-6 and MOSz328/9
Rigid Couplings, MOSz317
Rivets. Weights, MOSz4253; Button Head Rivets for Steel Constructions, MOSz-4254; Button Head Rivets for Boilers, MOSz4255; Flat-Top Countersunk Head Rivets, MOSz4256; Round-Top Countersunk Head Rivets, MOSz4257; Round-Top Half-Countersunk Head Rivets, MOSz4258
Steel Castings, MOSz2681
Textile Raw Material and Yarn. Net Weight, MOSz196

Italy

Agricultural Tools, UNI2588-2618
Axle Heights for Machines, UNI2946
Characteristic Measurement of Human Body (Male) and Tables of Garment Sizes for Boys and Men, UNI2649-46
Chemical Laboratory Glassware, UNI2738-57
Cotton Thread. Conversion Factors. Number of Twists. UNI2584-2586
Cotton Yarn. Counts System; Packing Specifications, UNI2492-2493

Determination of Cutting Speed of High Speed Cutting Tool, UNI2305
Drive-End Flanges of Electrical Machines, UNI2336
Erasers for Office Use (Temporary Standard), UNI2766-69
Hemp, Linen and Jute Threads. Conversion Factor. Number of Twists, UNI 2581-2583
Hemp, Linen and Jute Yarn. Counts System, Packing Specifications, UNI2492-2493
ISA Tolerance System Applied to Marine Constructions, UNI2737
Lifting Bolt with Round Eye and Threaded Stem, UNI2947
Lifting Oval Eye with Threaded Base Hole, UNI2948
Ordinary Pipe Flanges, Various Dimensions and for Various Pressures, UNI 2291-2304
Plywood Panels, Method of Testing, UNI 2641-48
Screws and Nuts of Special Forms, UNI 2377-2416
Special Types of Nuts, UNI2731-36
Special Wrenches for Union Nuts and Plugs for Flexible Tubings, UNI814
Standard Types of Metric Screws with Round, Flat, and Hexagon Heads, UNI 161
Testing of Cotton, Linen, Hemp, and Jute Threads, UNI2587
Tolerance System for Different Metric Threads (Temporary Standard), UNI 2758-65
Vegetable Fibre Cordage, UNI2635-37

South Africa

Specification for Storage Batteries for Use in Motor Vehicles, SABS-2

Switzerland

Convex-Type Spring Washers for Whitworth or Metric Threaded Screws, VSM 12752
Flat-Top Countersunk Head Machine Screw, 60°. Fully Threaded, Whitworth Thread, Diam ¼ to ⅝ in., VSM12162b; Flat-Top Countersunk Head Machine Screw, 60°. Short Partial Thread, Whitworth Thread, Diam ¼ in. to 1¼ in., VSM12163b; Flat-Top Countersunk Head Machine Screw, 60°. Fully Threaded, Metric Threads M6 to M16, VSM12164b; Flat-Top Countersunk Head Machine Screw, 60°. Short Partial Thread, Metric Thread M6 to M30, VSM12165b
Round-Top Countersunk Head Machine Screw, 60°. Fully Threaded, Whitworth Thread, Diam ¼ in. to ⅝ in. VSM 12166b; Round-Top Countersunk Head Machine Screw, 60°. Short Partial Thread, Whitworth, Diam ¼ in. to 1¼ in., VSM12167b; Round-Top Countersunk Head Machine Screw, 60°. Fully Threaded. Metric Thread M6 to M16, VSM12168b; Round-Top Countersunk Head Machine Screw, 60°. Short Partial Thread. Metric Thread M6 to M30, VSM12169b
Shakeproof-Type Lock Washers for Whitworth or Metric Threaded Screws, VSM 12754
Small Fillister Head Machine Screw. Fully Threaded, Whitworth Thread. Diam ¼ in. to ⅜ in. VSM12186; Small Fillister Head Machine Screw. Fully Threaded. Metric Thread M1 to M10, VSM12186
Welding Instructions for Examination and Supervision of Welders, VSM14061

United Kingdom

Annealed Steel Wire for Oil-Hardened and Tempered Springs, BSS1429:1948
Battery Connectors for Electric Vehicles, BSS1412:1947
Copper for Electrical Purposes, Bar and Rod, BSS1433:1948
Copper for Electrical Purposes, Commutator Bars, BSS1434:1948
Copper for Electrical Purposes, Sheet and Strip, BSS1432:1948
Dimensions of Instrument Jewels, BSS 904:1948
Electric Overhead Travelling Cranes for General Use in Factories, Workshops and Warehouses, BSS466:1947
Film-Strip and Film Slides, BSS777:1947
Fuels; for Oil Engines, BSS209:1947
Letter Symbols for Electronic Valves, BSS 1409:1947
Measuring Apparatus for Photographic Processing, BSS1405:1947
Methods of Analysis of Steel—Nickel in Permanent Magnet Alloys, BSS1121 pt 2:1948; Methods of Analysis of Steel—Tungsten, BSS1121 pt 2:1948; Methods of Analysis of Steel—Aluminum in Permanent Magnet Alloys, BSS1121 pt 4:1948; Methods of Analysis of Steel—Copper in Permanent Magnet Alloys, BSS1121 pt 5:1948
Pipe Flanges for Land Use, BSS 10 part 1:1947
Steel Spring Mattresses (Lay-On-Type), BSS1419:1947
Supplement No. 1 (1948) to British Standard 204-1943 Glossary of Terms Used in Waveguide Technique
Test Code for Ovens and Kilns Firing Pottery, BSS1388:1947
Thirty-Amp Flameproof Plugs-and-Sockets and Cable-Couplers, BSS1395:1948
Women's Dresses, BSS1346:1947

Uruguay

Color Code for Identification of Piping (Provisional Standard), UNIT38
Making and Curing Concrete Specimen Cylinders for Compression Testing (Provisional Standard), UNIT25
Safety Color Code, UNIT18
Sampling of Coarse Aggregates with the Aid of "Los Angeles" Machine UNIT17
Sampling of Crushed Stones with the Aid of "Deval" Machine, UNIT30
Testing of Portland Cement Concrete, UNIT66
Wind Pressure Upon Structures (Provisional Standard), UNIT50

South Africa Considers the Differences In International Fluid Measures

"Most people interested in sport are aware of the difference in size between the British and American golf ball, but how many members of the . . . public realize to what extent American fluid measures differ from Imperial fluid measures? To those who have previously never given the matter a thought, the following ratio may be of interest:

United States Measure	Imperial Measure
133 Fluid oz (British)	160 Fluid ozs (British)
equal 1 Gallon	equal 1 Gallon

"It seems obvious that the discrepancy between the two measures is capable of leading to a good deal of confusion in countries where Imperial measures are in general use. Where the labelling of liquids, insecticidal preparations, and similar fluids is done in terms of the American gallon, South African customs regulations lay down that dual labels should be attached, clearly stating the contents in South African (Imperial) units, e.g., '1 United States gallon, equivalent to 0.8327 Imperial gallon,' but this label is frequently overlooked by members of the buying public, who merely imagine that the American package is a cheaper version of the commodity they are accustomed to buy from countries using the Imperial measure. The suggestion has been made that all liquid contents might be stated in terms of fluid ounces, but even if that system were adopted, a considerable period would elapse before the average buyer assimilated the idea. It would, in fact, require a full size publicity campaign to stimulate the interest of the consumer. As the matter is one of importance, the South African Standards Council is appointing a small exploratory committee to examine the problem in all its aspects. Its recommendations will be submitted to the Assize Division of the Department of Commerce and Industries."

—*South African Standards Bulletin*

ASA Standards Activities

American Standards Approved Since July 1, 1948

Road and Paving Materials, A37—

Specifications for Paving Brick, ASTM C7-42; AASHO: M-40-42 and T31-42; ASA A37.15-1948

Method of Test for Unit Weight of Aggregate, ASTM C29-42; AASHO: T19-45; ASA A37.16-1948

Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Field, ASTM C31-44; AASHO: T23-45; ASA A37.17-1948

Method of Test for Compressive Strength of Molded Concrete Cylinders, ASTM C39-44; AASHO: T22-45; ASA A37.18-1948

Method of Test for Organic Impurities in Sands for Concrete, ASTM C40-33; AASHO: T21-42; ASA A37.19-1948

Method of Securing, Preparing, and Testing Specimens from Hardened Concrete for Compressive and Flexural Strengths, ASTM C42-44; AASHO: T24-45; ASA A37.20-1948

Method of Test for Surface Moisture in Fine Aggregate, ASTM C70-47; ASA A37.21-1948

Method of Test for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading), ASTM C78-44; AASHO: T97-45; ASA A37.22-1948

Method of Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate, ASTM C88-46T; AASHO: T104-46; ASA A37.23-1948

Method of Test for Compressive Strength of Concrete Using Portions of Beams Broken in Flexure (Modified Cube Method), ASTM C116-44; ASA A37.24-1948

Method of Test for Coal and Lignite in Sand, ASTM C123-44; AASHO: T113-45; ASA A37.25-1948

Method of Test for Flow of Portland-Cement Concrete by Use of the Flow Table, ASTM C124-39; AASHO: T120-42; ASA A37.26-1948

Method of Test for Weight per Cubic Foot, Yield, and Air Content (Gravimetric) of Concrete, ASTM C138-44; AASHO: T121-45; ASA A37.27-1948

Method of Test for Clay Lumps in Aggregates, ASTM C142-39; AASHO: T112-42; ASA A37.28-1948

Method of Slump Test for Consistency of Portland-Cement Concrete, ASTM C143-39; AASHO: T119-42; ASA A37.29-1948

Method of Sampling Fresh Concrete, ASTM C172-44; ASA A37.30-1948

Method of Measuring Length of Drilled Concrete Cores, ASTM C174-44; ASA A37.31-1948

Method of Test for Loss on Heating of Oil and Asphaltic Compounds, ASTM D6-39T; AASHO: T47-42; ASA A37.32-1948

Definition of Terms Relating to Materials for Roads and Pavements, ASTM D8-46; ASA A37.33-1948

Specifications for Materials for Sand-Cement Bed for Brick and Block Pavements, ASTM D58-37; ASA A37.34-1948

Specifications for Granite Block for Pavements, ASTM D59-39; ASA A37.35-1948

Method of Test for Softening Point of Tar Products (Cube-in-Water Method), ASTM D61-38; ASA A37.36-1948

Specifications for Calcium Chloride, ASTM D98-46T; ASA A37.37-1948

Specifications for Coal-Tar Pitch for Stone Block Filler, ASTM D112-30; ASA A37.38-1948

Specifications for Recut Granite Block for Pavements, ASTM D131-39; ASA A37.39-1948

Specifications for Granite Block for Durax Pavements, ASTM D132-39; ASA A37.40-1948

Specifications for Mineral Filler for Sheet Asphalt and Bituminous Concrete Pavements, ASTM D242-39; AASHO: M17-42; ASA A37.41-1948

Methods of Testing Emulsified Asphalts, ASTM D244-42; AASHO: T59-45; ASA A37.42-1948

Recommended Practice for Bituminous Paving Plant Inspection, ASTM D290-39; ASA A37.43-1948

Method of Sampling and Testing Calcium Chloride, ASTM D345-46T; ASA A37.44-1948

Method of Test for Centrifuge Moisture Equivalent of Soils, ASTM D425-39; AASHO: T94-42; ASA A37.46-1948

Method of Test for Field Moisture Equivalent of Soils, ASTM D426-39; AASHO: T93-42; ASA A37.47-1948

Specifications for Asphalt Plank, ASTM D517-40; AASHO: M46-42 and T77-38; ASA A37.48-1948

Specifications for Preformed Expansion Joint Fillers for Concrete (Non-extruding and Resilient Types), ASTM D544-41; AASHO: M58-42; ASA A37.49

Method of Test for Moisture Density Relations of Soil-Cement Mixtures, ASTM D558-44; AASHO: T134-45; ASA A37.50-1948

Method of Wetting-and-Drying Test of Compacted Soil-Cement Mixtures, ASTM D599-44; AASHO: T135-45; ASA A37.51-1948

Method of Freezing-and-Thawing Test of Compacted Soil-Cement Mixtures, ASTM D560-44; AASHO: T136-45; ASA A37.52-1948

Specifications for Cut-Back Asphalt (Rapid Curing Type), ASTM D597-46; AASHO: M81-42; ASA A37.53-1948

Specifications for Cut-Back Asphalt (Medium Curing Type), ASTM D598-46; AASHO: M82-42; ASA A37.54-1948

Specifications for Slow-Setting Emulsified Asphalt (for Fine Aggregate Mixes), ASTM D631-46; ASA A37.55-1948

Specifications for Sodium Chloride, ASTM D632-43; ASA A37.56-1948

Volume Correction Table for Tar and Coal-Tar Pitch, ASTM D633-44; ASA A37.57-1948

Method of Test for Cement Content of Soil-Cement Mixtures, ASTM D806-47; ASA A37.58-1948

Method of Test for Sulfonation Index of Road Tars, ASTM D872-46T; AASHO: T108-42; ASA A37.59-1948

Specifications for Cotton Mats for Curing Concrete Pavements, AASHO: M73-38; ASA A37.60-1948

Specifications for Subgrade Paper, AASHO: M74-38; ASA A37.61-1948

Method of Test for Quality of Water to be Used in Concrete, AASHO: T26-35; ASA A37.62-1948

Method of Test for Specific Viscosity (Engler), AASHO: T54-35; ASA A37.63-1948

Method of Test for Percentage of Bitumen in Bituminous Mixtures, AASHO: T58-37; ASA A37.64-1948

Method of Test for Flash Point with Tagliabus Open Cup, AASHO: T79-42; ASA A37.65-1948

Method of Test for Swell Characteristics of Aggregates, AASHO: T101-42; ASA A37.66-1948

Method of Test for Spot Test of Asphaltic Materials, AASHO: T102-42; ASA A37.67-1948

Method of Test for Inorganic Matter or Ash, AASHO: T111-42; ASA A37.68-1948

Method of Test for Abrasion of Coarse Aggregate by Use of the Los Angeles Machine, ASTM C131-47; ASA A37.7-1948 (Revision of ASTM C131-46; ASA A37.7-1947)

Sponsor: American Society for Testing Materials

Specifications for Photographic Grade Chemicals, Z38—

Sodium Hydroxide, Z38.8.225-1948

Potassium Hydroxide, Z38.8.226-1948

Sodium Carbonate, Monohydrate, Z38.8.-227-1948

Sodium Carbonate, Anhydrous, Z38.8.228-1948

Potassium Carbonate, Z38.8.229-1948

Sodium Tetraborate, Z38.8.230-1948

Sodium Metaborate, Z38.8.231-1948

Ammonium Hydroxide, Z38.8.232-1948

Mono-Methyl-Para-Aminophenol Sulfate, Z38.8.125-1948

2, 4-Diaminophenol Hydrochloride, Z38.-8.127-1948

Para-Aminophenol Hydrochloride, Z38.8.-129-1948

Pyrogallic Acid, Z38.8.130-1948

Catechol, Z38.8.131-1948

Para-Phenylenediamine, Z38.8.132-1948

Para-Phenylenediamine Dihydrochloride, Z38.8.133-1948

Chlorhydroquinone, Z38.8.134-1948

Potassium Iodide, Z38.8.201-1948

Potassium Chloride, Z38.8.202-1948

Sodium Chloride, Z38.8.203-1948

Benzotriazole, Z38.8.204-1948

5-Methylbenzotriazole, Z38.8.205-1948

6-Nitrobenzimidazole Nitrate, Z38.8.206-1948

Sodium Sulfite, Z38.8.275-1948

Potassium Metabisulfite, Z38.8.277-1948

Sponsor: Optical Society of America

American Standards Reaffirmed

Road and Paving Materials, A37—

Method of Test for Penetration of Bituminous Materials, ASTM D5-25; ASA A37.1-1930 Reaffirmed 1948

Method of Float Test for Bituminous Materials, ASTM D139-27; ASA A37.2-1930 Reaffirmed 1948

Method of Test for Determination of Bitumen, ASTM D4-42; ASA A37.3-1943 Reaffirmed 1948

Method of Test for Amount of Material Finer than No. 200 Sieve in Aggregates, ASTM C117-37; ASA A37.4-1943 Reaffirmed 1948

Method of Test for Specific Gravity and Absorption of Coarse Aggregate, ASTM C127-42; ASA A37.5-1943 Reaffirmed 1948

Method of Test for Specific Gravity and Absorption of Fine Aggregate, ASTM C128-42; ASA A37.6-1943 Reaffirmed 1948
Method of Test for Sieve Analysis of Fine and Coarse Aggregates, ASTM C136-46; ASA A37.8-1947 Reaffirmed 1948
Method of Test for Distillation of Tar Products Suitable for Road Treatment, ASTM C136-46; ASA A37.9-1943 Reaffirmed 1948
Method of Test for Softening Point of Bituminous Materials, Ring-and-Ball Method, ASTM D36-26; ASA A37.10-1943 Reaffirmed 1948
Method of Test for Ductility of Bituminous Materials, ASTM D113-44; ASA A37.11-1945 Reaffirmed 1948
Method of Test for Proportion of Bitumen Soluble in Carbon Tetrachloride, ASTM D165-42; ASA A37.12-1943 Reaffirmed 1948
Method of Test for Residue of Specified Penetration, ASTM D243-36; ASA A37.13-1943 Reaffirmed 1948
Method of Test for Sieve Analysis of Mineral Filler, ASTM D546-41; ASA A37.14-1943 Reaffirmed 1948
Sponsor: American Society for Testing Materials

Standards Being Considered for Approval

By the Standards Council—

Graphical Symbols for Electron Devices, Z32.10 (Revision of Z32.10-1944)
Sponsors: American Society of Mechanical Engineers; American Institute of Electrical Engineers
Dimensions for 35-Millimeter Magazine Film (for Miniature Cameras), Z38.1.49
Method for Determining Maximum Safe Temperatures for Photographic Processing Solutions, Z38.8.19
Methods of Testing Printing and Projection Equipment, Z38.7.5 (Revision of Z38.7.5-1943)
General Purpose Photographic Exposure Meters (Photoelectric Type), Z38.2.6
Sponsor: Optical Society of America

By the Board of Examination—

Approval Requirements for Domestic Gas Ranges (Revision of Z21.1-1942)
Requirements for Installation of Domestic Gas Conversion Burners (formerly American Standard Requirements for Installation of Conversion Burners in House Heating and Water Heating Appliances) (Revision of Z21.8-1940)
Approval Requirements for Hot Plates and Laundry Stoves (Revision of Z21.9-1940)
Approval Requirements for Gas Space Heaters (Revision of Z21.11-1942)
Listing Requirements for Domestic Gas Conversion Burners (Revision of Z21.17-1940)
Listing Requirements for Automatic Main Gas Control Valves (Revision of Z21.21-1935)
Approval Requirements for Portable Gas Baking and Roasting Ovens (Revision of Z21.28-1941)
Sponsor: American Gas Association
Specifications for Interior Marble, A94
Sponsor: Marble Institute of America
Dimensions for Theater Projection Screens, Z22.29 (Revision of Z22.29-1946)
Sponsor: Society of Motion Picture Engineers

By the Board of Review—

Specifications for Shock-Testing Mechanism for Electrical Indicating Instruments, C39.3 (Revision of American War Standard C39.3-1943)
Sponsor: Electrical Standards Committee

By the Mechanical Standards Committee—

Circular and Dovetailed Forming Tool Blanks (Revision of B5.7-1943)
Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

American Standards Being Considered for Reaffirmation

By the Standards Council—

Definition of Safety Photographic Film, Z38.3.1-1943
Specifications for Projectors for Opaque Materials for Use in Small Auditoriums, Z38.7.4-1944
Specifications for Contact Printers, Z38.7.-10-1944
Specifications for Printing Frames, Z38.7.-11-1944
Specifications for Masks (Separate) for Use for Photographic Contact Printing, Z38.7.12-1944
Sponsor: Optical Society of America

Standard Submitted to ASA for Approval

Painting Specifications, A95
Submitted by: Painting and Decorating Contractors of America

News About Projects

Transformers, Regulators, and Reactors, C57—

Sponsor: Electrical Standards Committee

Eighteen individually bound standards on transformers, regulators, and reactors, collected in a heavy paper binder for easy replacement, have been completed with the exception of one part. A proposed revision of this section, American Standard for Distribution, Power, and Regulating Transformers, and Reactors Other than Current-Limiting Reactors, C57.12, is out to letter ballot of the sectional committee. In view of the great demand for this new and enlarged publication, and to avoid further delay in making the transformer standards available, the document is being sold without C57.12. Since the cost of C57.12 is included in the price of the publication, however, it will be mailed free to all purchasers of the edition who fill out and return a postcard which will be enclosed with the document. It is expected that C57.12 will be available in about two months.

Electric Lamps, C78—

Sponsor: Electrical Standards Committee

Forty-three proposed American Standards for Incandescent Lamps are out to letter ballot of the sectional committee. They comprise a series of lamp tables, broken down according to application, and associated lamp outline drawings, which, together, establish dimensional and electrical characteristics.

Also out to letter ballot are six proposed American Standards for Cold-Cathode Series-Burning Fluorescent Lamps which specify dimensional and electrical characteristics.

Rubber Protective Equipment for Electrical Workers, J6—

Sponsors: American Society for Testing Materials; Edison Electric Institute

The new committee on standards for rubber equipment used for the protection of electrical workers is now working under the chairmanship of Gordon Thompson, Electrical Testing Laboratories. Henry Lamb, ASA staff, is secretary. The scope of the committee is defined as:

"Specifications for rubber protective equipment for electrical workers, including leather protectors for electrical rubber gloves to provide necessary protection for electrical workers for their particular occupational hazards; detailed construction requirements for such equipment and specifications for all of the significant materials used therein; recommendations for proper nomenclature and method of designation of such equipment and for such labeling and marking requirements as are deemed necessary."

The American War Standards on insulating line hose, rubber insulator hoods, rubber insulating blankets, and rubber sleeves were considered and changes made to meet peacetime requirements. All four standards will now be classified as "5000 volts insulation class" instead of having a voltage rating. In the peacetime edition of the standard on Linemen's Rubber Sleeves, dimensions to show the wrist opening, arm opening, and length for three types of sleeves will be included. It was decided that the standard on rubber-insulating blankets should be limited to those blankets without fabric reinforcement for the time being.

Six subcommittees have been set up to corry on the future work of the committee.

The revised editions of these four American War Standards have been sent to letter ballot of the committee for recommendation to the sponsors.

It is also understood that some of these standards are also being considered by Committee D-11 of the American Society for Testing Materials for approval as tentative standards of the ASTM.

The American War Standard on leather protector gloves, also considered by the committee, has been referred to a subcommittee for further study.

New American Standards Available

ASA NUMBER	TITLE AND DESCRIPTION OF STANDARD	PRICE
B5.4-1948	**Taps, Cut and Ground Thread** . . . . The revised edition of this American Standard includes the thread and general dimensions, with working tolerances, for hand, machine screw, tapper, nut, pulley, boiler, mud or washout, Staybolt, and pipe taps. (*Sponsors*: Society of Automotive Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; American Society of Mechanical Engineers)	1.50
B5.9-1948	**Spindle Noses for Tool Room Lathes, Engine Lathes, Turret Lathes, and Automatic Lathes** . . . . The long-taper key drive Type L spindle nose has been added in this revision of the standard. Complete dimensions for each size and type of nose, as well as for mating backs of chucks, face plates, and fixtures are given in the tables. (*Sponsors:* Society of Automotive Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; American Society of Mechanical Engineers)	.85
C59.13-1948	**Testing Sheet and Plate Materials Used in Electrical Insulation, Methods of (ASTM D229-46)** . . . . Procedures for testing stiff, flat sheet and plate materials to be used as electrical insulation, except as modified by the individual methods or specifications for a particular material, are covered in these revised methods. (*Sponsor:* American Society for Testing Materials)	.25
C59.14-1948	**Testing Laminated Tubes Used in Electrical Insulation, Methods of (ASTM D348-46)** . . . . The tensile strength, compressive strength, water absorption, and dielectric strength are among the characteristics treated in these methods for testing laminated tubes to be used in electrical insulation. (*Sponsor:* American Society for Testing Materials)	.25
C59.15-1948	**Testing Laminated Round Rods Used in Electrical Insulation, Methods of (ASTM D349-46)** . . . . The methods described in this revised American Standard cover the procedures for testing laminated round rod materials to be used as electrical insulation. (*Sponsor:* American Society for Testing Materials)	.25
C79.1-1948	**Glass Bulbs Intended for Use with Electron Tubes and Electric Lamps, Nomenclature for** . . . . The system of nomenclature described in the American Standard provides standardized designations for glass bulbs and glass bulb component parts by letter and number symbols. (*Sponsor:* Electrical Standards Committee)	.50
C79.2-1948	**Molded Glass Flares Intended for Use with Electron Tubes and Electric Lamps, Nomenclature for** . . . . Standardized designations for molded glass flares intended for use with electron tubes and electric lamps and the method for their determination are covered in this standard. (*Sponsor:* Electrical Standards Committee)	.25
G8.1-1947	**Zinc (Hot-Galvanized) Coatings on Structural Steel Shapes, Plates and Bars, and Their Products, Specifications for (ASTM A123-47)** . . . . These specifications cover the protective zinc coatings applied on structural steel shapes, plates, and bars, and their products by dipping the articles in a molten bath of zinc. (*Sponsor:* American Society for Testing Materials)	.25
O5.1-1948	**Wood Poles, Specifications and Dimensions for** . . . . Standard species, material and manufacturing requirements, dimensions, and storage and handling for wood poles that are to be given a preservative treatment are given in the revised edition of this American Standard. (*Sponsor:* ASA Telephone Group)	.50
Z10.3-1948	**Letter Symbols for Mechanics of Solid Bodies** . . . . The 1942 edition of the American Standard Letter Symbols for Mechanics of Solid Bodies has been brought up to date by the addition of an alternative symbol for Poisson's ratio. (*Sponsors:* American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; American Society for Engineering Education)	.30
Z38.8.12-1948	**Photographic Graduates** . . . . The material, pouring lip, shape, and graduation marks for photographic graduates are covered in this American Standard. (*Sponsor:* Optical Society of America)	.25
Z38.8.18-1948	**Chromium-Plated Surfaces for Ferrotyping** . . . . This American Standard gives specifications for both plated sheets and plated drums for ferrotyping. (*Sponsor:* Optical Society of America)	.25